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Conkey, G. E. Co.

CONKEY'S Stock Book

A Handy Reference Manual
ON FARM ANIMALS

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Prefatory Note

HORSES, cattle, sheep and swine: If any of these interest you then this book will be of interest.

But more than that, the aim has been to make it of positive, unmistakable value, not only for reading but as a handy book of reference, covering the chief facts the live stock owner needs to know about the four farm animals.

It s purpose is to be useful to you. If it is useful to you, then it is useful to us, reminding you that we are interested in your welfare and are ready waiting whenever you have need of us.

Command us in any emergency. Just *Conkey, Cleveland, U. S. A.*—that will reach us from any point on the globe, so long as Uncle Sam is on the job and the stamp sticks fast in the corner.

Yours for our common good,

THE G. E. CONKEY COMPANY.

Why Livestock?

TO be sure it pays to stick to the farm and live stock! Did you ever see a run down farm where the farmer kept plenty of live stock?

Did you?

Farming, like any other business, is made up of little things, countless details. It's the little things that make up the big failure or big success. Nothing is trivial.

Profit means putting the farm on a business basis, crowding to the limit for healthy production, spying out the sluggards and getting rid of them, whether hired help or live stock.

There are some farmers, who are only "miners"—always robbing the soil and putting nothing back into it. There is a limit to the available acres. We have learned to prize the land. Preservation and conservation of the soil is the problem of this country today. Crops alone can never make an ideal business farm. Besides this, there is too much waste in gleaning, culling, roughage, which vigorous farm animals could make into marketable flesh or products. Crop farming means congested labor—not hands enough in busy season, in winter too many hands waiting idle.

A business is not economically operated unless it distributes labor over the entire year. For instance, a six months' occupation might be considered profitable when estimated for that short period, while at the same time the income from it spread out over the whole twelve months might show an actual loss. Live stock equalize labor, distribute it through the whole year and justify the owner in making his contracts on a yearly basis. Help that is coming and going is not efficient or economical in farm management, any more than it is in an office or mercantile business.

Statistics show that in sections devoted to the raising of live stock and crops, the total wealth of farms is higher than the wealth of similar farms in sections of equal resourcefulness and equal area but devoted

to the raising of crops alone. Exceptions to this rule might occur in special tracts of virgin soil, or land on lake or river banks. But the general argument is not affected by such special exceptions.

"No grass, no cattle, no cattle, no manure, no manure, no crop," says an old Flemish proverb. "Farming in a circle" is the only productive method.

Regular and systematic fertilization of the soil is a prime necessity in farm management; and the economy of securing this necessary fertilizer right on the farm, instead of shipping and hauling from outside, is plain to any man. Moreover, material losses in grain and waste can be overcome where the farmer has plenty of live stock. Grain lost in the field during harvesting can all be saved and made into good pork and bacon simply by turning in the swine. Straw left in the fields after harvesting is of considerable worth as bulk food for cattle. While this stubble is burned on the ground in the large western tracts, such a practice would not be considered for a moment by the thrifty farmer and stockman on the average sized farm. Fields in which crops have been raised, neglected corners and road-sides, all can be easily cleaned of weeds simply by turning in the sheep, which always give a good account of themselves with food of this nature at their disposal.

The secret of success is thrift, in all its phases—and principally thrift in management.

Get back to the original statement—did you ever see a run-down farm where the owner kept plenty of live stock?

Everyone respects the owner of nifty, thrifty live stock. Horses, cattle, sheep and swine—each animal fits into its proper place. Live stock raising is the soil's salvation and swings the balance for profitable farm management.

Conkey's Stock Book

PROFIT means pushing to the limit of healthy production. There is no room for easy going methods on the farm of today. Beef type, dairy type, fleece or mutton, every farm animal must come up to the standard for quality selected, and must pay good returns on the money invested. Who wants star boarders?

Start right. Good care and feeding insure good qualities if the stock itself has them. This general subject of selection is the foundation of success or failure. Know what you want: pick your type: stick to it, and give it your unremitting care. No matter how good the ration and how well fitted to a special production, you will defeat the whole purpose of your feeding if you fail in the first place to select good animals of the type desired. You cannot get milk by feeding a beef animal, so you select in the first place the characteristics wanted, and then feed for the development of these characteristics alone. Nothing will correct mistakes in selection. Start right; then feed a plenty; but don't keep pitching down feed for a lot of greedy animals that make you no return.

Cut loose from Nature and her losing game—join hands with money-making science and then see how farming pays. Nature wants five years to make a 1000 lb. steer—but you can get that weight in one year. Nature wants just twice the time the modern hog raiser needs to make a 200 lb. hog. Nature made her plans for milk enough for a cow's calf, and she was satisfied with a milk flow during good pasture season—but are you so easily satisfied?

There is one mighty good thing you can learn from Dame Nature. You can learn how she operates her law for the survival of the most fit. Just follow that law boldly and follow it closely. You have a lot to do in your time and a shorter life than old Nature so make every bit of it count. Be particular, a good deal more particular than Nature. Weed out the "bad doers." Don't waste valuable time on a poor individual, for such weaklings will surely be developed at the expense of your other stock.

FITTING CONDITIONS Start first with conditions. Consider your surroundings and how they are suited to a given breed. It is right to plan for conditions as you hope them to be, but start with due consideration for things as they **actually are**. Certain breeds will not thrive, or produce their maximum results, no matter how good the care, if placed in surroundings at total variance with those under which they have been developed for generations past. We must take into account such inborn characteristics, the natural fitness to the conditions that we find. Thus, consider your facilities for raising the food-stuffs best adapted to the chosen breed, consider the lay of the land, its drainage and soil conditions on account of rain supply, and the nature of the climate with which you have to deal.

BREEDS Practically all breeds are good—that is good for something. No breed is fool proof. Know what you want. For beef production select carefully the animals intended for further development.

Different breeds vary in form. Select the individual specimens which show the greatest promise of the breed characteristics. Make it always an individual test. Then by corresponding feed and treatment develop always for that form. The individual specimens should be selected as specimens, and must be hardy, of a quiet disposition, not nervous and in general well adapted to the climate and range conditions of your farm.

In the same way, for milk production, care must be exercised to select the best possible individuals for the dairy herd. Here again make it a test of the individual and see to it that as individual specimens they have those necessary qualities of gentleness, strong nerve power, large capacity for storage of food stuffs and ability to utilize it for the production desired. Look for the large development of the milk bag, a long wide udder extending well forward and well up behind.

PREPOTENCY With any type, the capacity for correct transmission of characteristics to offspring, is another consideration. There are many breeds of cattle, horses, sheep and swine which are strongly prepotent and can be relied upon for constitutional vigor in transmitting their characteristics to the line.

BREEDING With horses, in-breeding is resorted to for the purpose of fixing permanently qualities of development toward a breed characteristic for which the breeder has been striving. Cross-breeding, on the other hand, is resorted to for the purpose of uniting in the foal characteristics of both sire and dam. With cattle, sheep and swine, in grading-up common stock, the choice of a male should be made with the view of producing in the offspring and establishing in the line the desirable qualities of the male. Moreover, there are certain laws governing breed characteristics. Prepotency, however strong, cannot always bring quick results.

Common undersized beef stock can be graded up to a larger and better standard of beef type than the same stock could be developed for milk production. It takes generations and the most intelligent selection before results of the highest dairy standard can be obtained. Just so with sheep: The Merino breed is known the world over for its fine quality of wool and stands at the head in that characteristic. But it is small, and for the production of mutton alone would represent an unprofitable breed. Now it might take four or five sheep generations to produce a good mutton form by crossing Merino dams with rams from one of the noted mutton breeds. But it would take from twenty to thirty generations to produce a breed of the fine wool qualities of the Merino from any of the mutton types.

Similarly in feeding: Some stock owners suppose that by feeding food stuffs high in carbohydrates (fat) a greater percentage of butter fat will be produced in the milk. But the percentage of butter in the milk of an individual cow or herd depends on inborn qualities in that cow or breed. Such a system of feeding would tend to increase the milk supply, and with it of course the total amount of butter fat. But it would not, could not, alter the strain characteristics to the extent of raising the standard of percentage of butter fat of the herd or cow. You can't feed it in,—you must breed it in. We should realize our limitations: know what to expect.

Breeding is hardly an exact science. But it works pretty close to mathematical rule. If there is any one thing positively settled by scientific farming it is this—that it's only common sense and everyday thrift

to breed only the best you've got, and always to use good blood for sires. Do not select for pedigree alone, or even individual performance. Put your real money in a proved sire: let his sons and daughters be the test of quality. You could experiment twenty years in breeding, and learn nothing more important than this statement you have just read.

Figure for yourself what you can do in a half dozen generations with strict attention to selecting pure bred sires in your herd.

GENERATION	SIRE	DAM	OFFSPRING	
	Per cent Pure Blood	Per cent Pure Blood	Per cent Improved Blood	Per cent Unimproved Blood
1st	100	0	50	50
2nd	100	50	75	25
3rd	100	75	87.5	12.5
4th	100	87.50	93.75	6.25
5th	100	93.75	96.87	3.12
6th	100	96.87	98.84	1.56

This table has equal application in the breeding of all classes of live stock.

You can see that it really does pay, as nothing else on the farm can pay, to put money into the right kind of a sire.

CARE OF LIVESTOCK

BREEDING, Care and Feeding—these three topics make up the whole science of managing livestock to make it pay.

There can be no thrift in management without equal attention to all three.

You start right when you make a proper type selection, and you keep right when you follow scientific care, and feed according to feeding laws.

Man can combat nature—that is, he can counteract bad conditions by proper care, and get a surprising amount of good even out of bad material. But the thrifty farmer must keep a sharp eye out on thriftless Nature, for she is a wasteful, extravagant dame. The truth is that Nature cares only to preserve herself by perpetuating the most fit. The unfit she gets rid of the easiest way.

It is a curious fact that in a state of nature, if animals breed to the extent of overcrowding, Nature frets herself until she starts some disease, which gets rid of the weakest animals and leaves more room for the best. Disease-producing germs were intended by Nature for just this culling out of the weakest—plants, brutes or men—for a healthier survival of those most fit.

AGAINST NATURE Domestication with the consequent crowding into stables, pens or other buildings, is against natural law. Nature will fight against it; but the thrifty stockman knows how to fight against Nature's laws.

Wild horses and cattle roaming the plains were not crowded in their range, and the most abundant air, food and vigorous exercise aided to keep up the standard of health. But even then, they were thinned by natural enemies and disease, when demanded for balance by Nature's law.

In domesticating living creatures, animals or fowls, even in the housing and crowding of man himself, we know we are going against Nature's law. Consumption, the great white plague, may be the greatest but it isn't the only "house disease," as your doctor will tell you any day.

Wherever living creatures congregate will be found disease germs, to say nothing of parasites lurking and waiting for victims. Perfect health in any organism has, by that same Nature's law, the power of resistance, even to very serious disease conditions. There is a healing process in the healthy cells of living tissue. It fights disease germs, destroys them, throws them off. But let the same living creature become weakened from any cause and it loses this resistance; disease germs attack it like ravenous wolves and if the right sort of help does not come in time the life of that organism is destroyed.

Just as civilized man must live in houses, so livestock must, to be profitable, put up with conditions against Nature's law. But, warned of the danger, the up-to-date stockman can keep a sharp lookout, and be armed for the fight against Nature's law.

KEEP CLEAN In this whole problem of close quarters and profit in livestock, the chief question is Sanitation; the next most important is Sanitation; and SANITATION is the most important of all.

Keep everything clean. Disinfect regularly if you expect to keep down disease germs. Many of the diseases of animals are of germ origin; to fight these germs is a first essential, and is just as necessary as to feed and water the stock. An ounce of prevention is still worth a pound of cure. Nearly all diseases of stock may be traced to poor feeding, unsanitary quarters and insufficient care. Cleanliness, absolute cleanliness, is as important as any other consideration. Disease germs thrive in filth and dirt and all conditions that favor mould or fungus growth.

Let us thoroughly understand what is meant by filth, for a little of it means a lot. On the foot of a common house fly, six hundred thousand typhoid germs have been found, and six million on the whole of its little body. When we think of such facts we will cease to think of heaped-up manure piles as the only source of germ contagion. We begin to understand that any taint can harbor germs.

DISINFECTING Disinfection is a necessity. A good, economical liquid disinfectant should be kept on hand and used regularly. Any disinfectant used must be good enough to kill a germ by odor as well as contact; and while thoroughly effective as a germ killer, at the same time it must not be injurious to livestock either in odor or contact. It must be non-explosive, non-corrosive, non-poisonous,—that is safe—and of an agreeable nature, so that it can be used conveniently, and what is more, will be used,—not only in barn and stable but in sick room (systematically for prevention and always when occasion needs). To meet all practical purposes the disinfectant used must be an antiseptic, germicide, parasiticide and insecticide all in one. Let us take a moment to go over these four points, which are the four cardinal points in helping Nature to combat unnatural conditions on the stock farm:

WHAT IS AN ANTISEPTIC? An antiseptic is a healing remedy in this sense; that while it has no healing property in itself,—as the healing process is in the living cells of the tissues only,—it prevents the germs and bacteria from hindering nature in its healing process. It keeps the tissues germ-free and healthy. Nature with these

does its own wonderful work in closing a wound and knitting up the flesh. A true antiseptic destroys the enemies to healing, and the wound then will heal of itself. If it were not for bacteria no wound would be fatal unless a vital organ were crippled. Abscesses, wounds, and sores give the very best conditions for the growth of germs and, without any antiseptic, they swarm with them. It is the tendency of every open sore to form pus.

WHAT IS A GERMICIDE? There are some germicides that would be dangerous to use as antiseptics. Germicides work in two ways—by odor and by contact. A good germicide that is effective by both odor and contact, will, if systematically used, prevent the growth of disease germs under conditions where they would naturally thrive and multiply to the danger point. Germicides keep down dangerous gases and make the atmosphere clean. They don't take the place of shovel and hoe or an extra hired man, and will not clean out filth; but they will make the atmosphere wholesome and free from the germs which cause disease.

WHAT IS A PARASITICIDE? If your antiseptic and germicide has that property which makes it a parasiticide it is a truly valuable product. By parasiticide we mean ability to destroy, not only the lice and vermin which infest the animal upon the surface of the skin, but the parasites which burrow under the surface and cause skin disease like mange, itch, etc. To be a true parasiticide the preparation you select must do all this, but it must stop with the parasite and **not** hurt the animal in the least or injure the skin, hair or wool.

WHAT IS AN INSECTICIDE? Now comes the full test of a general, all-around article: It must kill insects,—anything from a bed-bug, cockroach, or flea, to the potato-bug or the little aphids that injures the rose bushes; and ants and all creeping and crawling things. Thus it is an insecticide. Such an article is Conkey's Nox-i-cide Dip and Disinfectant, an article that can be depended on at all times for countless purposes, the best all-around dip and disinfectant, parasiticide and insecticide for the farmer and the stock owner of today.

CLEAN HEALTHY STABLES In stable sanitation great strides have been made in the last few years. Even legislation has taken a hand in many states, enforcing inspection to meet the demand for clean healthy stables and sanitary dairy conditions. Especially is this true where dairy and beef cattle are kept. On first thought such laws might be felt to work a hardship upon the owners of stock. But as a matter of fact they are a benefit to everyone; and especially to owners, who actually reap an increased profit from living up to the requirements of the law.

Stagnant water, or water accumulated in holes without an outlet should be avoided. Here again it is worth while to repeat the caution to keep all the yards clean. Remove all manure and accumulated rubbish. Drain the wet places and fill them in. Stir up the earth so that the sun can get to it and purify it. Sprinkle once a month with a good disinfectant, like Conkey's Nox-i-cide Dip and Disinfectant, which is a general purpose article. Disinfect thoroughly. Whitewash all sheds for sheep or swine, and make everything sweet and clean. See index for receipt for United States government whitewash.

FLOORS If the floors are rotting with manure take up the planks and thoroughly remove the accumulation beneath. Take out an inch or two of earth as well; put in a layer of concrete composed of one part Portland cement and three parts clean sand. After this sets, disinfect thoroughly with Conkey's Nox-i-cide Dip and Disinfectant and finally put back the planks, after having treated them on all surfaces with Nox-i-cide. You will find this method of construction a great improvement. Not only will it outlast the old, but it will be an easier matter to keep the stable clean, besides giving you opportunity to disinfect underneath. Do not allow manure to remain in the stable any length of time. It is injurious to your animals' feet. It ruins the air the animals breathe. Its fumes rise to the loft and spoil the feed. Its decomposition causes the wooden floor to decay.

If board floors are kicked out by stamping horses take better precautions against flies annoying stock. Use Conkey's Fly Knocker during the troublesome season and cut down this lumber expense.

BUILD RIGHT Rough seasons have their hardships for stock in close quarters. With plenty of room for the stock to be housed, and proper conveniences for those who take care of them, every stable should be warm, light, well-ventilated. This means in the first place

Round Barn—A type now much in favor

proper construction; stables should be roomy, with plenty of windows and these arranged so that the light comes from behind the animals instead of directly in their faces. Floors on which animals stand should be pitched just enough to carry off the water. Stalls should slope to the gutter 2 inches in 5 feet. The gutter should fall 1 inch in 20 feet. There should be means for ventilation without draft, but sufficient to carry off all bad odors. The well-known King system is the best. Round barns are now much in favor as they give greatest capacity for the area covered,

and of course take less building material. They are easily lighted, easily ventilated and are very convenient for doing the work.

It is true that the needs of animals vary with their kind and condition. Species vary as to constitution. Swine need more protection than any other animal, as the hog's coat is very thin; dairy cows come next; beef, horses and sheep follow in the order given. Warm and comfortable quarters are absolutely necessary to swine if they are to be kept thrifty and growing all through the months of winter. An open shed is the best shelter for sheep, which need plenty of fresh air. An old stable too cold for horses can often be remodeled for sheep, care being taken that it is not made too compact and air tight. The main points with sheep are to keep them dry and out of the wind.

Animals show greater production and gain from the food consumed if they are given proper shelter and care. Also note that while exercise in winter makes better assimilation of the feed, a greater amount of food is needed to maintain body heat when the stock is unduly exposed to the cold, so that there is an increase in cost of production with no corresponding gain. Age and health must always be reckoned in considering temperature. Young animals need safer shelter than animals that have fully matured, this fact being true of all species,—foals, calves, pigs and lambs.

FRESH AIR One of the chief essentials is ventilation. We know from physiology that the waste matter in the blood is carried through the vein canals to the lungs and there subjected to the process of oxygenation. Oxygenation as you know is really washing in air. You wash a thing to get it clean. You can't wash a handkerchief clean in dirty water. Thus, blood cannot be "washed clean" if the air in the lungs is not pure, that is, does not contain the necessary amount of oxygen. Animals must have pure fresh air to breathe. Now consider: A horse requires twenty times as much oxygen as a man. Five horses then, shut up in a stable, would have the same effect on the atmosphere there as one hundred men confined in the same space. Have you air enough in your stable for five horses? Would you like to be shut up in there with ninety-nine other men?

Ventilation should be in proportion to the number of animals. Cows should have 500 cubic feet per head. Look to it that your stock have plenty of fresh air in barn or stable. Animals are sometimes confined for long periods, such as cattle during the winter or other inclement weather. In respect for Nature's law, in protection of your investment, you must—side by side with sanitation—look to ventilation in your stable management. Have you windows enough? If necessary, saw holes in your barn and cover them with muslin. Watch drafts, but let in plenty of fresh air.

TO THE DUMP! If your stable has a strong smell take the necessary steps to get rid of the odor. Clean up thoroughly. Disinfect. (See index for Conkey's Nox-i-cide Dip and Disinfectant.) Send old broken brooms, mouldy shoes, old coats and hats, old straps, collars and whatnot to the dump. They collect dust, favor fungus growth and are a breeding place for germs. Wash the windows free from cobwebs and dust. Why keep out the sunlight? Science claims the actinic ray in sunlight is one of the most powerful disinfectants and germicides. Apply a coat or two of government whitewash (see index for receipt) to

ceilings and walls. It will make the stable more cheerful, intensify the light, and be more sanitary in many ways.

HOW TO DISINFECT When you disinfect, see that you **disinfect**. Here's how we do it: Remove first all dried accumulations about the mangers, floors and drains. Then sprinkle disinfectant. Don't wash before sprinkling disinfectant for the water will carry the germs into the cracks. Disinfect first. Use a good article, and a cheap good one, because you must be willing to put on enough. Many places must be thoroughly saturated in order to get in contact with all the germs. Get into every crack and crevice, go wherever dust goes. Go after the floors and the lower walls with a scrub brush or broom, and use a spray pump on higher places. After disinfecting whitewash (every three months or six months anyway). Germs of many diseases can keep alive for months.

PULSE To test an animal's normal condition try the pulse. This will show the heart action, which in turn will show the state of the general nervous system. To take the pulse of the cow, stand at the left side of the head and reach over to the left jaw. To take the pulse of the horse feel under the lower jaw where the sub-maxillary artery winds under it. If you stand at the left of the head of the animal and run the fingers along the lower jaw-bone the artery may be felt at the front edge of the large muscle at the side of the jaw. In dog or sheep the pulse is taken from the femoral artery on the inside of the hind leg.

Note that in health the pulse is full, round and even. It varies in different animals:

Horse	30 to 40 beats per minute
Cow	35 to 42 beats per minute
Sheep	70 to 80 beats per minute
Dog	70 to 90 beats per minute

In young animals the pulse is always greater. Also it is greater of course under action or excitement. The pulse varies in quality,—is hard where the artery is full and stands out under pressure; quick, where the beat comes spasmodically, though the number of beats per minute may be no greater; slow, where the beats come up fully; soft, where the artery is not full and hard; irregular when uneven beats; intermittent, where some beats are entirely dropped.

Pulse is an indicator of health condition, but only experience can teach the meaning of different degrees in force and fulness, as well as differences in frequency of beats. A veterinarian grows accustomed to these differences, and can tell at once the probable nature of the ailment. Generally speaking, in a sick animal a quick pulse indicates fever; a slow, weak pulse, debility; a hard, jumping pulse, inflammation. In disease of the heart the pulse is irregular, or intermittent. A slow, full pulse may indicate brain disease.

TEMPERATURE Temperature tests are important, and it is surprising how few stock owners keep on hand a self-registering clinical thermometer, as its use is one of the best and easiest means of diagnosing trouble. The thermometer should be shaken down before using

and should be left in the body of the animal for three minutes at least. It is most conveniently inserted in the anus or vulva and should be held in place about three minutes. Here is a table for normal temperature

Horse	99.5°—101° F.
Cattle	100° —103° F.
Sheep	101° —105.8° F.
Dogs	99.5°—103° F.
Swine	100.9°—105.4° F.

A rise in temperature indicates fever, i. e. inflammation. A rise of six degrees is dangerous and in any disease a rise of four degrees is serious. On the other hand a sudden fall below normal is serious, showing loss of the animal vitality, and if not quickly corrected, may result in death. Always sterilize the thermometer, dipping it in Conkey's Nox-i-cide Dip and Disinfectant solution, before using it on the next animal.

OTHER TESTS Breathing is another test of an animal's condition. A horse breathes from twelve to fifteen times a minute when in health; a cow from ten to twenty-five times; a dog about twenty times. Rapid breathing may be caused by exercise, heat or some excitement. Also, breathing is faster after eating when the lungs are crowded by the digestive organs. But these are all healthy conditions.

Short, rapid or labored breathing shows disease of the lungs. Snoring shows some stoppage of the air passages of the head; or snoring may come from brain disease, and is often noticeable when death approaches. In horses, a peculiar double contraction and expansion of the abdomen shows heaves. Coughing shows obstruction or irritation in throat or lungs, and may be of two kinds, moist or dry. The latter, the "dry, hacking cough," shows some irritation of throat or lungs, while the moist cough is accompanied by mucous, which shows an unnatural secretion and accumulation of fluids in the air passages.

Mucous is a secretion of the mucous membrane, the peculiar body "lining" which covers all openings of the body, lining the entire alimentary canal and all organs where air may enter. Inspection of these mucous surfaces aids in determining the animal's condition. If red, there is congestion of blood from some irritation; if pale, weakness from impoverishment of the blood; if blue or gray in color it shows the blood supply lacks oxygen; if yellow trouble with the animal's liver.

Excretions come next. The natural rejectment of the body is in solid feces or dung, and liquids and vapors, especially the urine and perspiration. As with all animal life, the appearance of these is an indication of the working of the animal's body and the owner should know the general indications. For instance: in horse dung a coating of mucous shows intestinal catarrh; bloodiness, inflammation; paleness and foul odor, a torpid liver; in fever the urine is scant and highly colored. When a horse has azoturia (excess of nitrogenous matter) the urine will turn to a light brown and later to a dark brown color. In Texas fever or southern cattle fever the urine is red.

Often you can tell a sick animal from its position and action of body. An animal always tries to place itself in a position that will relieve any pain or distress of body. Note this carefully as it will help in diagnosing the trouble. Disturb the sick animal as little as possible and of course make all approach to it quietly. If the hair stands up the animal is suffering from chill, or may be hidebound. The skin, if harsh and hidebound, shows poor nutrition, though the trouble may

be with the food or with the animal's own digestive system. Watch the appetite. Look out for any signs of pain, unusual nervousness, depression, for all these help to show what is the trouble.

As in human ailments, the nursing and care of the sick animal is of as much importance as the actual medicine. Little attention is paid to it usually, simply because so few know what and how to do. The medicine is right to be sure. But care and attention must go with it. Naturally, the best caretaker for a sick animal is the one most familiar with it; for beside being more soothing to the sick animal, he can best note symptoms or changes that in many cases would be entirely overlooked by a stranger.

The logical treatment with any disease is: Find the cause and then the cure. The cause once found, remove it and so prevent a second attack. Even when colic in horses or bloating in cattle require the most prompt attention, look for the cause just the same. The cause once discovered, the big difficulty in curing will be removed.

SICK ANIMALS Sick animals should be separated at once from the others. When possible, if the trouble is serious, take the well animals to new clean quarters where there is no chance of infection. This is not always possible in crowded stables, so the use of a good disinfectant such as Conkey's Nox-i-cide Dip and Disinfectant is necessary to make the old quarters pure and sanitary again. The attendant should also use Nox-i-cide to avoid any possible infection himself, or danger of spreading the trouble to the rest of the stock.

A comfortable box stall is the proper accommodation for a sick animal, or one giving birth to young. It is surprising so few box stalls are provided. A box stall should be placed so that it will be dry and well ventilated, as well as warm in winter and cool in summer and should be kept at a temperature of 60-65° F. as nearly as possible. It should not be less than 10 x 12 feet in size. It should be strongly made and smoothly ceiled on the inside walls and overhead, to admit of ready disinfection. It should have a good plank floor, as dirt or paved floors are liable to be cold and damp. There should be two doors, one opening into the barn and another into a level yard, and they should not be opposite one another to cause draft. The doors should be made with upper and lower halves, and should close and should be wide enough to carry an animal in or out when not able to walk. There should also be a barred window that can be opened, closed or darkened as desired. In one corner should be a movable feed box. Strong rings should be provided for tying and holding the head up for drenching. Strong hooks in the ceiling will also be found useful if it is ever necessary to use a sling.

In caring for sick animals, the quarters should be kept absolutely clean. Nox-i-cide in the wash water (1 to 100 parts water) will be effective. Occasionally spraying the walls, floors and ceiling with a strong solution will be necessary. This will kill all germs and also kill bad odors from disease, medicines, etc.

FOOD FOR SICK ANIMALS The food for sick animals is as important as the medicine. Keep up the strength for resistance to disease by careful feeding and tempt the appetite. Easily digested, nutritious, but not bulky foods, should be given. Laxative foods should also be given when required. Good foods for sick animals are not always the same for all species, but they may be suggested as follows: Freshly cut grass, chopped carrots, chopped apples,

gruels, milk or bran mash, made by stirring bran into boiling water. These may sometimes be mixed with beaten raw eggs, or other simple strengtheners that would not be taken alone. Raw, boiled and crushed oats, and bran, can be made up in various ways to tempt the appetite, and a little salt dashed with Conkey's Stock Tonic added will often make food acceptable where it would otherwise be refused. Keep the feed boxes, pails and utensils in an absolutely clean condition. Conkey's Nox-i-cide Dip and Disinfectant in 1 to 100 solution makes a disinfectant wash water.

BRAN MASH Bran mash is excellent for all live stock, as it is easily digested and acts as a gentle laxative. To make a bran mash, first scald out the pail, fill about two-thirds full of bran, add salt, and pour on boiling water sufficient to make a thick mass. Never make bran mash too thin. Stir well and cover tight to hold the steam. Let stand about twenty minutes, or until cool enough for the animal to eat it. It should be given warm for its full beneficial effect. Bran mash is well liked by all animals and makes an excellent means of giving medicines.

DRENCHING A HORSE This is a simple operation provided the horse's throat is not sore. If sore, this or any irritation will make him cough and likely cause strangling. Pinch the throat first, and if the animal coughs do not attempt to drench it but give an electuary, that is a mixture of medicine and molasses or honey, which can be smeared on the back part of the tongue with a wooden paddle or long handled spoon. It will dissolve slowly and be swallowed with the saliva.

Getting ready to drench a horse

But to drench a horse proceed as follows: Make a small loop at one end of a piece of rope, slip it over the upper jaw behind the front teeth, then pass the other end of the rope over a beam or through rings installed for the purpose, and gently draw up the head to a convenient level for operating. Do not draw the head too high or the horse then cannot swallow—any more than you can when your head is thrown back. Use a taper necked bottle or a drenching horn, inserting it at the corner of the mouth in front of the molars and pouring the medicine slowly into the cheek. Take time and pour slowly, giving the horse a chance to swallow. Horses sometimes refuse to swallow, in which case tickle the roof of the mouth with the neck of the bottle. Do not pull the tongue or knead or pinch the throat, although light stroking is not harmful. If the horse coughs let down the head at once, lest any fluid get

down the windpipe and bring on pneumonia, which often proves fatal. Never drench through the nose for this is not only cruel but dangerous; and many deaths follow the barbarous practice. A drop or two of medicine can be flicked on the nostrils, however, and will usually make a horse swallow whether he wants to or not.

**DRENCHING
WITH A SYRINGE**

This is often the simplest method of drenching, especially for small doses. A drench should seldom exceed a pint, and usually it can be given in 8 fluid ounces. Use an ordinary hard rubber syringe and empty the syringe far back in the mouth. Repeat as often as necessary for the dose required.

**DRENCHING
CATTLE**

It is perfectly safe to drench cattle, provided the liquid is poured cautiously, with plenty of time allowed for swallowing. Cattle are more easily drenched than horses for the simple reason that they cannot refuse to swallow, as horses often do—hence there is not so much danger of liquid getting into the windpipe or lungs. Raise the head by placing thumb and forefinger in the nostrils, lifting the head high enough so that the medicine will not run out of the mouth. Let an assistant hold the head steady by the horns or the ears. A taper neck bottle is all right for the purpose, or use a regular drenching horn.

**DRENCHING
SWINE**

The best way to give medicine to swine is in the feed. If a sick hog won't eat you can give a drench, if first you tie up the animal, with a slip noose over the upper jaw. Don't try to drench while he is squealing, for you may strangle him. Look out that he don't crunch the bottle and so cut his mouth.

**DRENCHING
SHEEP**

A sheep cannot be drenched very well when it is standing up, as some of the liquid is almost sure to get into the lungs. Back the sheep into a corner on its rump; then straddle the animal so that you can steady its head between your knees while you partly open the mouth and pour the medicine slowly into the right corner of the mouth. Thus there is no danger of choking.

**GIVING A
MEDICINE BALL**

Medicine is often worked up with lard, honey or molasses into a cylindrical mass less than 1 inch in diameter. It is then called a "bolus" or ball. It should never weigh more than 1 ounce or be more than 3 inches long. It should always be freshly prepared, never hard and dry. It takes a quiet manner and quick action to give a ball. To give a ball, stand in front of the horse, with the ball in three fingers of the right hand, then grasp the tongue with the left hand, pull it well forward with the tip upward; then insert the right hand, push the ball or pill well over the bulge of the tongue to the back of the root of the tongue and quickly withdraw the hands. Hold the head in a natural position with the mouth closed and watch the neck until you see the ball pass down the gullet. Then offer the animal a drink of water. Of course, do not give a ball if the horse's throat is sore, as he may cough it up in the nasal cavity, whence it may be hard to dislodge.

POULTICES

In cases where heat and moisture are required, as in case of a sprain, bruise, inflammation or congestion or inflammation of any sort, the best way of obtaining these is by means of a poultice. In this way a considerable surface can be covered and the heat or medication can be applied for a considerable period of time. Bran, flaxseed, boiled carrots, etc., make good material for poultices. The purpose of a poultice is to reduce swelling, assist in absorption and allay pain. To do this it must be applied hot and be kept hot as a large part of its value is in the heat thus applied. In cases where there is a dis-

charge of pus the old bandage and poultice material should be burned so as to prevent infection. A poultice should be changed, or freshened with hot water, at intervals of two or three hours. Mixing a poultice with Conkey's Nox-i-cide Dip and Disinfectant solution instead of water, prevents souring and also makes the poultice an antiseptic dressing. The best poultice for ordinary veterinary use is bran mixed to a paste with Conkey's Hoof Remedy according to simple directions.

Pads and Poultices as adjusted—Pattern for a "Many-Tail" Bandage

In poulticing the foot it is usually most convenient to use a poultice boot, as shown in the cut. This is simply a bag of stout sack cloth or other strong cloth, coming up high enough to tie above the fetlock. It can be filled with the poultice material and applied very conveniently. For throat, leg and various parts of the body the most useful bandage is what is called the many-tail pattern, which is simply a strip of cloth slashed into ends convenient for tying.

FOMENTATIONS These are local applications of hot water from twenty minutes to a half hour at a time. The hot water is applied as hot as can be comfortably borne, and the temperature kept up by adding hot water as it cools. Apply with sponges, cloths, or with the hands, and keep up a gentle rubbing while applying. Two or three times a day is the usual rule. Fomentations are generally used to relieve acute pain and swelling from rheumatism, injuries, and other irritation. Cold water is excellent to relieve inflammation and congestion. It can be applied with wet cloths or the part can be irrigated by letting cold water drip upon it.

HEALING AGENTS These may be antiseptic cleansing lotions, such as Nox-i-cide solution; or soothing applications, such as Conkey's Pain Lotion; or salves or ointments, such as Conkey's Healing Salve; or astringent dry dressings, such as Conkey's Healing Powder. The important thing in every case is to secure asepsis, that is, kill the germs of infection, so that the cell-tissue can repair itself without interference. If there is much pain in the part to be dressed, Conkey's Pain Lotion

should be selected as the healing agent, because of its soothing properties. Pain Lotion also softens the parts, as does Conkey's Healing Salve. Salves should be used purely for surface treatment, never in deep cuts or sores. If a part is exposed to irritation always use the dry dressing, Conkey's Healing Powder, which is perfectly antiseptic. Many surgeons favor dry healing entirely.

SHOO FLIES! Horses and cattle should be protected from troublesome flies, not only from the standpoint of humanity but because it is unthrifty abuse of stock to let cattle devote good energy to swishing flies instead of grazing and producing milk, or gains in beef. Similarly horses lose flesh and spoil in spirit when exposed to the torment of flies. It is a waste of flesh, animal vigor and good feed. It is impossible to over-estimate the torment to cattle in warm weather from pestiferous flies; and the loss to owners, both in quality and amount of production.

Conkey's Fly Knocker abates the nuisance and keeps the flies from annoying stock. It is a positive boon to dairymen throughout the country. It keeps the dreadful buffalo fly, or gnat, of southern sections from accomplishing its purpose and cattlemen in these sections save thousands of dollars annually, simply by spraying with Fly Knocker. Wherever used it prevents lice and grubs on cattle, and bots on horses, from egg deposits of the gadfly. Besides this, many infectious and dangerous diseases are communicated by ordinary flies and they spread infection from carion and refuse of every sort. Prevention is the watchword—use Conkey's Fly Knocker.

BED RIGHT Often too little attention is given to the quality of bedding used in stables and barns. Animals should be well bedded with something that will keep them clean and dry and give them comfort while lying down. It should be free from irritating substances and absorb moisture readily. Straw, coarse hay, fine shavings or coarse sawdust all make good bedding. When straw or hay bedding is used see to it that it is bright and clean, free from mould or fungus growth. Bedding should be cleaned out each morning. The cleanest may then be dried and used again, and the balance saved with the manure.

GETTING MOST VALUE OUT OF MANURE

Part of the production you pay for as owner of live-stock is manure. One of the tests of management is the attention you give to, the use you make of this. Managing the farm, like managing a factory, calls for thrifty use of every bi-product. The elements in manure you have paid for pound by pound in your feed bills. These elements have a sound commercial value, but rightly used they have even more value on your own ground. "Livestock raising is the soil's salvation," is the slogan of today.

That fertilization is necessary to successful farming is known to most farmers, but few realize the importance of handling farm manure so as to get the full value from it. The manure from one horse or cow for a year is said to be worth as much as \$25.00, but with the usual methods of handling, it is quite safe to say that by the time the manure reaches the land it has lost half its original value. To obtain the most plant food value, the manure should be spread on the ground where it is to be used as soon as possible. By hauling manure to the fields daily there is practically no loss from leaching, that is, draining or washing away. It should be spread uniformly over the land and not piled in small heaps, which is wasteful in fertilizing material. A good manure spreader will soon pay for itself and should be on every farm. They are not only a great saving in labor but by

spreading the manure uniformly over the land the most possible good is obtained. If manure must be stored it should be kept under cover if possible and on a tight floor, keeping it only wet enough to prevent heating. Where the manure must be accumulated in heaps it is a good plan to sprinkle a few pounds of land plaster over it each day to absorb and hold the ammonia until the soil can get it. Where a phosphate fertilizer is to be applied to the soil it should be mixed with the manure at the rate of one pound of rock phosphate or floats per day for each animal. This should be mixed with the manure as it is taken from the stable. Some caution is necessary against the use of wood ashes and lime with manure as these materials produce an alkaline condition, resulting in the loss of ammonia, which carries off the nitrogen. Lime and ashes if needed for the soil should be applied other years than when farm manure is used. Soils differ greatly, so do their requirements; and it is well to have a knowledge of the subject for the profits of the farm depend largely on intelligent fertilization of the soil.

The following table of manurial values is given in a bulletin issued by the United States Department of Agriculture:

Droppings from cows	\$2.02 a ton
Droppings from calves	2.18 a ton
Droppings from horses	2.21 a ton
Droppings from pigs	3.20 a ton
Droppings from sheep	3.30 a ton
Droppings from hens	7.07 a ton

BETTER PASTURES

Feeding from pastures will always be one of the cheapest methods of feeding, as well as offering enormous other advantages which will readily occur to any farmer. But the worth of any pasture depends upon the kind of grass of which it is composed, and the care you give it. Most pasture lots in this country consist of one kind of grass only, and often it is indifferent in quality. If permanent pastures, they are frequently grown with one grass, such as Blue grass in the North, or, in the South, Bermuda; but how much better is a mixed permanent pasture, where the selected best grasses for forage are grown in combination, giving variety, and furnishing grazing at all stages of the growing season. Unquestionably, a permanent pasture of the highest quality and one from which the stock could derive a maximum of good, would be composed of various selected grasses, such as Kentucky Blue, Russian Brome, Timothy and Western Rye.

But more of this when we come to the topic of feeding.

WATERING STOCK

Side by side with pasturage is the question of watering stock. Plenty of drinking water is necessary for health or full production. The ideal system in mild weather is watering from brooks flowing through farms, since running water has the advantage of purifying itself by its constant exposure to the atmosphere. On the other hand water in wells close to barns, manure piles, or otherwise affected by surface drainage, is sure to be unclean and sooner or later will be the source of disease. Look to the water supply. If the water is bad the animal suffers.

The water should be at an agreeable temperature. The ice-bound drinking trough in winter is one great cause of poor production. Thrifty farmers warm the drinking water always. Troublesome? Yes—but on general principles it is a good deal cheaper to heat the water on a stove than in the stomachs of your valuable animals.

YOUR HIRED MAN

Stable management is entirely too important a matter to be left to any but a careful supervisor. If men are hired for stable work see that they are kind as well as capable. The hired man has not the self-interest stimulus which usually makes the owner a good caretaker, but see that he has self-pride, and a good deal of natural love for dumb animals, to take its place. When you get hold of a good man—one painstaking in his work, faithful to your interests and the welfare of your stock—treat him the best you know how, for it will pay, like any other good investment, for the more thrifty management of your farm.

RIGHT FEEDING

I. The Scientific Theory

HUNCH your shoulders and get right down to it. You have here the biggest one thing in managing live stock for profit. Feed for profit. Most anyone can feed an animal so it won't starve. There is neither sense nor money in that. The problem you are working is, how and what to feed for biggest possible profit in the animal's production with the least possible cost.

THE WAY DAD DID Fifty years ago you didn't have to bother—simply went ahead with the feeding and fed the way Dad did. Or, if Dad was a failure, you copied your most successful neighbor. It was the only way you could do; for what and how much feed to use was all settled by experience. There was no science about it.

Stock raisers knew, from looking around and comparing different plans of feeding, just about what they might expect from each in the way of energy, production and thriving condition. Real knowledge of the subject was in no man's head; and there was no short-cut through science, which is what science is good for to us practical farmers.

THE WAY WE DO We've a short-cut to all this knowledge, without waste of years and labor, waste of live stock and waste of production.

We know that foods vary; that their goodness depends on certain necessary elements, which we call nutritive elements. We know that not one of these, but all of them must be included or there is loss of energy, loss of production, maybe loss of the animal; and that always, if not fed in the right proportion as to these certain elements, the feed is expensive.

NOW FOR IT! THE ELEMENTS

The names of these elements are so important, that even the children on the farm ought to know them.

We wish all the names were one-syllable; so every boy and girl, down to the littlest shaver, could repeat them, and grow right up with a knowledge of their importance. Let us try dividing the big ones; and maybe that boy or girl of yours will tackle them anyway, as follows:

Pro-te-in
Car-bo-hy-drates
Fat
Ash or mineral

} Called the "nutritive elements" or "digestible nutrients"; all necessary to feed an animal.

Now: every single food for dumb animals or human beings must contain some one or more of these digestible nutrients; and usually any given food will contain every one of these elements, but in very different

proportions. For instance, you hear a feeder say of a certain feed that it is "strong in protein" but lacks mineral; or that it is rich in fat, but lacking carbohydrates (starch and sugar).

ALL ARE NEEDED Again: Any food containing one or more of these elements, but not all, must be combined with other food of a kind to make up the missing element or elements. For in the sum total of feed all of these elements must be included.

NONE MUST BE WASTED Lastly: To be economical, the feed must be so combined that the animal gets the different elements in the right proportion. Starvation in one element means a craving. The animal tries to meet this by eating more heartily. Bulk of other elements will not satisfy this aching void; and thus there is a waste of feed, waste of energy, and loss of production, all from this one lack of some necessary element.

NATURE WASTEFUL Now it's just as well to remind ourselves at the start that in the old days when animals were kept under more natural conditions with plenty of pasture, each could pretty well select for itself what it needed to keep up the chemical balance of nutritive elements. Appetite, craving, was Nature's guide; and with rich pasture the animal could crop here and there until every essential was provided. Plainly no stockman of this day can afford to turn his animals loose on rich, virgin pastures; and when not given this wide natural choice the feeder of the animals must be science-wise to make up the proper selection for them.

SCIENCE IS FRUGAL Guess we all agree in these few statements, and won't make any holler about this modern idea of scientific feeding. It isn't a complicated new-fangled notion; but horse sense, cow sense, sheep sense, hog sense all put into man's brain so he can use plain common sense and feed his animals (1) according to their need and (2) what he expects to get out of them (3) with no useless waste of these elements.

SIMPLER TO DO Science has simplified, not complicated things. It has given us rules by which we can go straight ahead and get the biggest gains without unnecessary waste in the actual food consumption. Another thing, this modern science has proved how necessary it is to fit each ration to the individual, and not try to establish a standard for a whole class of animals.

GETTING FOOD VALUE FROM FEED It isn't—we know it isn't—the food in its crude state that gives nourishment to an animal; but the soluble, digestible nutrients contained in the crude material. In other words:

The actual nourishment has to be in solution.

Water must therefore be supplied the animal in sufficient quantity to put the various digestible nutrients of the food in solution.

WHAT THEY DO The digestible nutrients we carefully named above and now we will trace each and see what becomes of it, as follows:

Protein—Makes or repairs muscles, tendons, internal organs, skin, also blood, milk, etc.

Carbohydrates—These (starch and sugar) give energy and heat.

Fats—Give energy and heat, being burned up, that is "oxydized" in the body. If in excess of needed amount, the body frugally stores it up as body-fat—between tissues and in layers, over parts, as a reserve for lean hard times.

Ash or mineral—Make bones, teeth and all such hard structures of the body.

FOR INSTANCE Take a fat calf and analyze its body. You will find about as follows: 60.1% water; 4.5 ash; 13.1 fat; 15.3 protein; with contents of stomach and intestine not digested, but making up a balance of 7% of the total.

Or, take a sheep as estimated by H. P. Armsby's percentage table, which we express graphically as follows:

	Ash	Protein	Fat	Water	Undigested Matter
LEAN	3.4	15.4	8.6	56.6	16.0
WELL FED	3.3	14.8	13.2	53.7	15.0
HALF FAT	3.2	13.8	18.3	50.7	14.0
FAT	2.9	12.2	28.1	44.8	12.0
VERY FAT	2.8	11.4	37.2	39.0	10.0

NATURE'S BANK-ING SYSTEM The bony, hard structure of the body while practically the same whether an animal is lean or fat is greater in proportion when the animal is poor and lean.

But the one most interesting thing is the change in the proportion of fat to the whole make-up of the animal's body; showing how this is not needed for the work or repair of the body, so long as the animal continues to get good feed; and consequently it is piled up as fat wherever the body can find a place to store it. It is in fact stored just as the camel of the desert stores up water, as a reserve supply; only the camel tanks up this water in a kind of reservoir, while fat is distributed all through the body, marbling the flesh, as butchers say, or surrounding its parts with layers of fatty tissue. Now, suppose something happens to this fat animal, whether it is disease or neglect or any hardship so that the body does not get the proper food or is not in condition to digest and make use of it. The animal grows lean and poor, you say. The truth is, for a long, long time the body keeps up by living on itself, feeding on its reserve nourishment in the fatty tissues. If the animal has been over-fat, there will be a real sense of improvement in feeling as this over-fat decreases; that is, the animal will feel more bodily vigor, more energy. In the case of a horse this is important as he is valued for the work we can get out of him, rather than for ornamental appearance or butchering weight; but with animals fed for meat production, it is this fattened condition we are after. The point, however, to keep in mind is this:

Over-fat is not a condition of true health in nature.

If you are demanding this over-fat condition, you must counteract the dangers of it. You must combat nature.

Just how to do it will be outlined later.

WHAT IS A MAINTENANCE RATION?

Protein, carbohydrates, fat and ash, as explained above, must all be combined in the feed to keep the animal alive in normal, healthy condition.

When the food has all these necessary elements in due proportion, it actually feeds the animal, i. e., maintains good healthy condition. When this food, containing all needed elements, is supplied in just the quantity needed from day to day, we call it a "maintenance ration." This means, the ration maintains the animal, that is, it is sufficient for comfort and repair of waste, for 24 hours, but gives no margin for new growth or production.

WHAT IS A BALANCED RATION?

When the food, containing all these necessary elements, is sufficient for the animal's needs and in addition is sufficient for all we want that animal to do; and moreover is so combined or proportioned that there is no excess of any one or more of the needed elements so that all is used and nothing wasted, the food is then called a "balanced ration."

A balanced ration takes for granted a good, liberal supply of growth, development, or any other energy required of the animal. A maintenance ration just gives enough for the animal's own needs, with nothing over for new growth or new energy. It is plain to see that there is no money in feeding just a maintenance ration. It is simply humane, and keeps the animal in comfort from day to day, with nothing over for the owner's profit.

For instance:

To maintain existence	To produce for profit
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This line represents a "maintenance ration" or "half ration," keeping the animal in health, but with no margin over.

To maintain existence	To produce for profit	
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This line represents the maintenance ration plus an allowance for, let us say, milk production for the owner's profit. In this case it is a "three-quarters ration."

To maintain existence	To produce for profit
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This line represents the maintenance ration plus an allowance for ALL the animal CAN BE MADE TO YIELD FOR THE OWNER'S PROFIT. It is a FULL PRODUCTION RATION.

Profit depends on what you feed ABOVE the mere MAINTENANCE RATION up to this limit of full production.

And this is not all clear profit either: You will see that your security against actual loss for the keep of the animal depends on your feeding more than maintenance ration; for the animal must pay you back for board and care, and in addition turn you a good profit on the money invested.

We have seen how under natural conditions each animal must graze and graze until all the needed elements are secured for this "balanced" ration. The domesticated animal has no such chance; but must take what it gets from its feeder. In other words, every animal must depend on the "balanced" judgment of its owner. Hence we say, in all this question of feeding, a balanced ration is good; but a balanced judgment is better.

Now, again, clearly the natural grazing animal had no one crowding it on for production; so of course, with good maintenance ration, it had

a digestion in full working order. Each nourishing element was promptly put in solution by the juices of the body, and so absorbed by the hungry tissues. If the animal took more of any element than the tissue had power to absorb, then that extra was all wasted. Chemists speak of "saturate solutions," meaning of course, that as much is dissolved as will dissolve,—for instance, boracic crystals in hot water. The rest is all waste, since it cannot get into the solution. But it does for the time being clog the system; just as the excess of boracic crystals crowd down to the bottom of the vessel which holds the "saturate" boracic solution.

Any element that clogs the system, i. e., can not be put in solution, is a wasted element in the system of feeding.

It not only wastes itself, and is a needless expense for that element; but it taxes the energy of the animal just that much to get it, and then to get rid of it.

With the natural grazing animal this waste all came back to the land, anyway; so nature didn't care how wasteful or extravagant her system might be.

"NOTHING WASTED?" Nature never stops to think about waste. She is a simple-minded old dame; and says curtly it all stays in the universe, so "nothing is wasted." She never thinks of the waste in time and energy, which mounts up so rapidly.

FIGHTING NATURE The man who pays for feed, does care. He's downright glad to know all there is to know on this mighty important subject of "balanced" rations.

Since a poor ration all digested (i. e., put in solution so the body sponges can take it up) is better than the best of all possible rations not all digested but wasted; the keen man holds one eye in suspicion on old Nature, and with the other keeps watch of the animal's digestive ability. He's in the race for profitable production. He knows it's a fight "agin nature." It's a race with her—sometimes with a farm mortgage as the wager. But it is a race the stock owner can win—with energy and Conkey's assistance.

Why Conkey? Because in full 95% of all cases, the hard pushed domestic animal must at times have digestive assistance. But more about this in the proper place later.

HAVE YOU ANY HOLE IN YOUR POCKET? So we see just how it is that a food too high in one element, protein for instance, and low in others will be fed at a loss. Protein happens to be the most expensive element; but the facts would be the same if the excess happened to be carbohydrates (starch and sugar, which furnish body fat and heat) or ash (which furnishes bone). Any one of these fed in excess of the animal's digestive capacity, i. e., power to put in solution and absorb in solution, is wasted, and makes a hole in the owner's pocket. Protein is the element we are most careful not to feed in excess; because it is expensive, and makes the biggest hole in the pocket.

A ration must be not only balanced, but economical.

WHAT IS THE PRODUCT? You balance a ration according to what you want to get out of it—horsepower, dairy products, baby beef, mutton or bacon. Food too high in protein will produce muscle at the expense of fat; too high in carbohydrates will

make too much fat and little meat; too high in mineral or ash will make the animal rangy, with a gangling or heavy bone structure, in each case wasteful.

So you see it takes a long head and "balanced" judgment to be a profitable feeder. But as a scientific problem it is pretty simple to work out, isn't it? And think of the difference in profit when you feed for what you want to get, get all you ought to have, and waste nothing over!

HAVE YOU A LONG POCKET-BOOK? It takes a long pocket-book—one long and wide and deep—to let the feeding problem take care of itself, without regard to cost and profits.

Stick to the balanced ration. Temper it with balanced judgment, and remember that practical feeding (just as with practical breeding) can never be an exact science; and no real scientist claims that. Good judgment—your own—must moderate any working rule anywhere suggested.

TURN TO THE TABLE All this talk has been about protein, carbohydrates, fat and ash; because it's the protein, carbohydrates, fat and ash that you actually feed—whether in form of corn, wheat, oats, roots or hay. But to figure out a ration you'll have to work from a table of values of common feeds such as are given on pages 29 and 30. So better put a mark there and turn back to it whenever you have need for reference.

SELECTING THE RATION Choose the feed for what you want to get out of it. The growing or hard working animal, or one under pressure of breeding, or of milk production, needs what is called a "narrow" ration; meaning a large proportion of digestible protein. Idle full-grown animals need less of this protein and a larger proportion of carbohydrates, or what is called a "wide" ration. Any animal needs enough of this protein element in its feed to replace the daily loss of tissue, and make new growth of hair, hoofs, etc.

A NEGLECTED ELEMENT The mineral or ash element is one often neglected after an animal is grown. Mineral or ash is needed not only in the bone, but as a necessary element of various parts of the body. If at any time the food does not supply what is needed of this element, lime, phosphate, etc., the tissues actually take it from the bone substance itself. The frame of the animal becomes brittle and "soft" from lack of mineral. Fractures and such accidents are likely to occur; the owner often wondering what could have caused them. Animals with young especially need this mineral substance for the bony structure of the offspring's body. If it isn't supplied in the feed, nature will get it from the parent animal's body. The bones of the mother will actually be robbed for what is needed by the young animal's growing body. This is nature's way. She gets even. In the same way if the daily ration does not provide the other nutritive elements needed, the poor animal simply draws from its own fat tissues, and thus feeds on its own body for maintenance, or for the growth of the offspring.

WHAT IS A "NUTRITIVE RATIO"? In books on feeding, in farm papers, etc., you will often come to this term, the "nutritive ratio;" and we should make sure that we all know just what it means without merely getting along with a guess or two at it. We spoke above of the proportion of protein to carbohydrates,

etc., in a feed. This proportion of protein is what fixes the nutritive ratio. Thus the "nutritive ratio" of a certain ration might be written, 1:6, which we read 1 to 6, and which could just as well be written in a fractional form $\frac{1}{6}$, meaning that in this particular ration the protein was $\frac{1}{6}$ of the ration. The other $\frac{5}{6}$ would be the combined carbohydrates and fats. For instance, starch, sugar and fibre of stalks, etc., would be the fats. It is a "narrow" or "wide" ration according to whether there is more or less of the protein, the "narrow" ration meaning a large proportion of protein in comparison with the total carbohydrates and fat.

So you see, in any question of feeding, you work out a "balanced" ration, making it wide or narrow according to the result you want in production. Now we come to the big principle of getting not only a "balanced" but an economical ration.

CHEAPER FEEDS Often, by a little practical looking around, a ration can be balanced just as well out of home-grown and near-by less expensive feeds, and so save fully 50% of the owner's cost for feeding.

Suppose, for instance, a stockman is some distance away from both oats and timothy crops: Let him look around; it is more than probable he can substitute a number of cheaper, more convenient home-grown feeds, which he can use to just as good advantage.

WHAT IS ECONOMY? This looking around for cheaper, more convenient products is one-half of the problem: "How to economize in feeding." The other half is the question of waste, already indicated; and it is certainly a big half in economically balancing a ration. Without proper knowledge of the elements to be properly balanced, a farmer might feed timothy or any ordinary hay along with corn, which would certainly be wasteful. These two feeds belong to the same class. To get the necessary quantity of digestible protein in a ration, say, of 15 lbs. of corn, with timothy hay, as much as 36 lbs. of the hay would have to be used, which is absurd on the face of it. No work animal could consume this amount in a day; moreover, there would be a waste of 14 lbs. of carbohydrates over what the animal needed, which would mean over-taxing the animal's organs, and an endless chain of complicated trouble. But, if with the 15 lbs. of corn, alfalfa hay was combined, 10 lbs. would be all that was needed, making a well-balanced ration, supplying everything needed, and doing it all economically in cost to the owner and ease to the animal's digestive system. The trouble here was that corn and timothy hay, being both of them grasses (Gramineae), were both rich in carbohydrates but poor in protein. Alfalfa, being a legume or pod bearing crop, is rich in protein, however, and thus capably filled in the deficiency of the corn ration.

It all sounds wordy, but it isn't hard to understand. We know it in theory already. Do we always put this knowledge into practice?

Even suppose you do, and I do—still the average man doesn't fully think out his feeding rations and suit each one of them to the animal's requirements.

$300 \times 100 \times 15\frac{1}{2}c = ?$ For instance, we know, in a certain Southern section, a 100-mule place where they feed on oats and hay. But they could select other foods, easier to get in that section and cheaper, and could balance them into a combination, say molasses, corn-and-cob meal, cotton-seed meal and hay, which would make a saving on each

animal of $15\frac{1}{2}$ c a day. This cheaper feed would have just as good food value, mind you.

Figure what this saving would come to—100 times $15\frac{1}{2}$ c per day. By the time you multiply this amount by the 300 full working ration days in the year, you have something to show for it, haven't you? Does scientific feeding pay?

PLEASING THE PALATE

Let us stick to this same illustration: adding molasses in this ration supplies, you say, the sugar needed; but in fact it does a great deal more—it makes the mixture

palatable.

Palatability is a sort of food insurance, or assurance. If palatable, more food is eaten, and **it is better digested**. Never forget this.

"SEASONING"

Often there are cheap, easy-to-get feeds on the place but such as the animal doesn't seem to relish. Did you ever try seasoning such a ration—either mixing up the unpopular but wholesome part along with the best liked part of the ration; or else just using our convenient appetizer, Conkey's Stock Tonic? Digestion starts right if a food is palatable. At the signal of the palate the mouth "waters" we say, meaning that the salivary glands respond. A man or animal that doesn't relish his proper food is just sounding the honk, honk horn for trouble.

A food may balance all right and still not suit the animal's notion. Don't reject it but combine it with the Stock Tonic in the small doses suggested on the package; when it will make the food more likable and act as a general conditioner, without strong medicinal effect, on account of the small quantity used.

Remember again: **IT ISN'T THE FOOD IN ITS CRUDE STATE THAT NOURISHES. IT IS WHAT THE DIGESTIVE PROCESSES GET OUT OF IT.** The animal must chew thoroughly, digest fully, so that the nutritive elements we have been talking about become soluble and can be taken up by the tissues. Stock Tonic when used in the amount indicated for a conditioner, gives palatability to food; and thus the necessary elements in the ration are put in solution by the digestive juices which appetite excites to secretion.

UNDIGESTED WASTE

We first discussed the kind and amount of food taken. We see now there is this added element—how much the animal can get out of it. By actual test $5\frac{3}{4}$ lbs. of crude fibre produced more than $2\frac{3}{4}$ lbs. of waste or excrement—only a little over half of it was digested. Some authorities claim that full digestibility is secured (approximately) only when the proportion is as follows:

Cattle

1 part digestible crude protein to 8 parts digestible carbohydrates and fat. Nutritive ratio, 1:8.

Sheep

1 part digestible crude protein to 12 parts digestible carbohydrates and fat. Nutritive ratio, 1:12.

ANIMALS AND PRODUCTS

Animals make quite a different use of their feed; and according to Prof. Henry,* the cow leads all farm animals in ability to convert crops into marketable products, with other livestock—the pig, fowl, steer and sheep—in the order

*Henry's "Feeds and Feeding."

given. But, in fairness to the sheep, note, this does not make any allowance for the mutton animal's side line of wool for profit. The horse has naturally less digestive capacity, or rather ability, than the cud-chewing animals. For instance, compare as follows:

The horse in comparison with the sheep gets:

1/2	the utility of straw.
3/4	" " " hay.
9/10	" " " clover or alfalfa.
10/10	" " " concentrates, oats, etc.

The choice of a ration depends both on the kind of animal to be fed and the kind of production desired. We usually estimate 10 lbs. of dry matter to make a pound of beef; but 30 lbs. of dry matter to make a pound of butter.

A "BALANCED RATION" Now sum up, and see what we come to:
A balanced ration must be balanced right for:

- (1) The animal to be fed,
- (2) The product fed for,
- (3) Chemical elements,
- (4) Total weight of food,
- (5) Total bulk of food,
- (6) Palatability, digestibility.

PALATABILITY— Palatability and digestibility are close kin in feeding;
DIGESTIBILITY still they aren't twins, and we mustn't confuse them.
In a few special cases, palatability lessens digestibility; for instance, cooking rather lessens digestibility of food for livestock, though making more palatable. (Potatoes and such starchy tubers are the exception to this fact. They are much better for livestock when cooked.) Grinding increases both palatability and digestibility, making the food more available, so that digestion can start at once with the saliva in the animal's mouth. However, if this grinding costs more than 10% of the value of the grain, the advantage is too expensive to be very practical.

VARIETY Palatability has in it another important element—variety.
IN FEEDING Animals thrive where feeds are changed from time to time, so that they get proper variety. In other words, after a certain time food loses by sameness some of its palatability. On the other hand, up to a certain point food gains by habit or custom; for there are many instances where feeds were not relished when newly introduced to livestock, but later on proved very acceptable when the stock got used to them—rape, for instance, which is now so relished by sheep on western ranges. Of course no change must be sudden. The animal must be accustomed gradually to the change, or digestive troubles will follow.

CONTENTED Fright of any kind checks the digestive operation.
MIND A "contented mind is a continual feast."

Kindness to animals greatly aids digestion.

These are scientific conclusions.

Average Digestible Nutrients and Fertilizing Elements in Common Feeds

Dry matter in 100 lbs.	KIND OF FEED	DIGESTIBLE NUTRIENTS IN 100 LBS.				FERTILIZING CONSTITUENTS IN 1 TON		
		Protein	Carbohydrates	Fat	Total with fat x 2 1-4	Nitrogen	Phosphoric Acid	Potash
Lbs.	Green Fodders	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
28.2	Alfalfa	3.6	12.1	0.4	16.6	15.4	2.6	11.1
20.0	Barley and Peas	2.1	9.1	0.4	12.1	9.0		
25.0	Barnyard millet	1.6	14.4	0.3	16.7	7.6	2.2	11.6
10.2	Beet pulp, wet	0.5	7.7		8.2	2.8	0.6	22.8
25.2	Clover, Alsike	2.6	11.4	0.5	15.1	12.4	2.2	4.0
19.1	Clover, Crimson	2.4	9.1	0.5	12.6	10.0	2.4	8.0
20.0	Clover, Mammoth	2.0	9.1	0.2	11.5	9.6		
29.2	Clover, Red	2.9	14.9	0.7	19.4	14.0	3.0	9.6
16.4	Cowpea	1.8	8.7	0.2	10.9	7.6	2.6	9.2
20.7	Fodder corn	1.0	11.9	0.4	13.8	5.8	2.2	7.8
28.9	Hungarian grass	2.0	15.9	0.4	18.8	10.0	2.4	8.4
34.9	Kentucky blue grass	2.8	19.7	0.8	24.3	13.3		
20.3	Oats and peas	1.8	10.2	0.4	12.9	7.6	3.0	10.0
20.0	Pasture grass, mixed	2.5	10.1	0.5	13.7	10.2	5.2	14.8
20.6	Sorghum fodder	0.6	11.6	0.3	12.9	4.2	1.4	6.8
24.9	Soy bean	3.1	11.0	0.5	15.2	12.8	2.8	11.2
9.9	Teosinte	0.9	4.9	0.2	6.2	4.4	1.2	18.4
	Dry Fodders and Hay							
93.2	Alfalfa	11.1	39.1	0.6	52.2	49.4	12.2	35.8
92.9	Bermuda	6.4	44.9	1.6	54.9	34.2		
86.0	Blue grass	4.4	40.2	0.7	46.2	25.0	8.0	31.4
90.3	Clover, alsike	8.4	39.7	1.1	50.6	41.0	10.0	27.8
84.7	Clover, red	7.1	37.8	1.8	49.0	39.4	11.0	37.4
59.5	Corn stover, (stalks)	1.4	31.2	0.7	34.2	12.2	7.6	21.8
89.5	Cowpea	5.8	39.3	1.3	48.1	28.6	10.4	29.4
85.7	Crab grass	4.8	35.8	1.0	41.8			
89.8	Johnson grass	2.9	45.6	0.8	50.3	23		
88.4	Marsh hay	2.4	29.9	0.9	34.3			
86.0	Millet	5.0	46.9	1.1	54.4			
86.0	Oat hay	4.7	36.7	1.7	45.2	28.4	13.4	50.8
90.0	Pea hay	8.0	41.0	1.7	52.8	37.6	11.0	21.6
89.5	Oat and pea hay	7.6	36.8	1.5	47.8	33.0	12.2	36.2
90.8	Prairie (upland)	3.0	42.9	1.6	49.5	9.9		
91.1	Red top	4.8	46.9	1.0	53.9	25.2	7.2	20.4
94.2	Sorghum	2.5	44.3	0.9	48.8			
86.8	Timothy	2.8	42.4	1.3	48.1	18.8	6.6	28.4
85.8	Timothy and clover	4.9	40.1	1.5	48.9	28.6	8.3	32.9
88.7	Vetch	11.9	40.7	1.6	56.2	54.4	19.4	48.8
90.0	Wheat	3.2	45.7	1.9	53.2			
	Straw							
85.8	Barley	0.9	40.1	0.6	42.3	14.0	4.0	21.2
90.8	Oat	1.3	39.5	0.8	42.6	11.6	6.0	35.4
92.9	Rye	0.7	39.6	0.4	41.2	10.0	5.0	17.2
90.4	Wheat	0.8	35.2	0.4	37.0	10.0	4.4	12.6
	Silage							
27.5	Alfalfa	3.0	8.5	1.9	15.8			
15.0	Apple pomace	0.7	9.6	0.5	11.4	3.8	3.0	8.0
29.7	Brewers grains	4.6	11.5	1.8	20.1	20.2	8.4	1.0
26.4	Corn	1.4	14.2	0.7	17.2	8.6	2.2	7.4
26.3	Corn, ears removed	1.1	14.9	0.7	17.6	7.0		
21.0	Corn cannery refuse	0.3	11.9	0.6	13.5	4.6		
20.7	Cowpea	1.5	8.6	0.9	12.1	8.6	3.0	9.2
23.2	Pea cannery refuse	2.1	13.1	0.8	17.0	9.0		
28.0	Red clover	1.5	9.2	0.5	11.7	13.4		
23.9	Sorghum	0.1	13.5	0.2	14.0	2.6	3.0	3.8
	Roots and Tubers							
11.5	Beets, common	1.2	7.9	0.1	9.3	4.8	1.6	9.6
13.5	Beets, sugar	1.3	9.8	0.1	11.3	5.8	1.6	7.4
9.1	Beets, mangels	1.0	5.5	0.2	6.9	4.4	1.8	7.6

Average Digestible Nutrients and Fertilizing Elements—Continued

Dry matter in 100 lbs.	KIND OF FEED	DIGESTIBLE NUTRIENTS IN 100 LBS.				FERTILIZING CONSTI- TUENTS IN 1 TON		
		Pro- tein	Carbo- hy- drates	Fat	Total with fat x2 1-4	Nitrogen	Phos- phoric Acid	Potash
Lbs.	Roots and Tubers	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
11.4	Carrots	0.8	7.7	0.3	9.2	3.6	1.8	5.2
11.7	Parsnips	1.1	10.1	0.2	11.6	5.2	4.0	8.8
20.9	Potatoes	1.1	15.7	0.1	17.0	6.8	3.2	1.6
11.4	Rutabagas	1.0	8.1	0.2	9.5	3.8	2.4	9.8
28.9	Sweet potatoes	0.8	22.9	0.3	24.4	4.8	1.6	7.4
9.9	Turnips	0.9	6.4	0.1	7.5	4.2	1.8	6.8
	Grains, Seeds and their By-Products							
89.2	Barley	8.4	65.3	1.6	77.3	38.4	15.8	9.6
23.0	Brewers grains, wet	4.9	7.6	1.7	16.3	21.4	8.4	1.0
91.3	Brewers grains, dry	20.0	32.2	6.0	65.7	80.0	32.2	4.0
90.5	Malt sprouts	20.3	46.0	1.4	69.4	84.2	34.8	39.0
91.6	Beet pulp dried	4.1	64.9		69.0	25.8	4.4	6.2
86.6	Buckwheat	8.1	48.2	2.4	61.7	34.6	13.8	6.0
91.8	Buckwheat bran	5.9	34.0	2.0	44.4	40.2	8.4	25.4
86.8	Buckwheat hulls	1.2	28.6	0.5	31.4	14.6	8.6	29.4
87.2	Buckwheat middlings	22.7	37.5	6.1	83.9	85.4	24.6	22.8
89.4	Corn	7.8	66.8	4.3	88.6	33.0	14.2	11.4
85.0	Corn meal	6.7	64.3	3.5	78.9	29.4	12.6	9.4
84.9	Corn and cob meal	4.4	60.0	2.9	70.9	27.2	11.4	9.4
90.6	Corn bran	6.0	52.5	4.8	69.3	35.8	20.2	12.4
89.3	Corn cob	0.5	44.8		45.3	7.8	1.2	12.0
92.4	Distillers grains	22.8	39.7	11.6	88.6	89.8	12.0	3.4
90.8	Gluten feed	21.3	52.8	2.9	80.6	80.0	7.4	0.8
90.4	Hominy chop	6.8	60.5	7.4	84.0	33.6	19.6	9.8
89.7	Cottonseed	12.5	30.0	17.3	85.7	59.8	21.0	21.8
88.9	Cottonseed hulls	0.3	33.2	1.7	37.3	13.4	8.6	20.8
93.0	Cottonseed meal	37.6	21.4	9.6	80.6	145.0	60.8	31.6
89.7	Cocanut cake	15.4	41.2	10.7	80.7	63.0	32.0	48.0
85.4	Cowpeas	16.8	54.9	1.1	74.2	65.6	20.2	24.0
90.8	Flax seed	20.6	17.1	29.0	104.7	72.4	27.8	20.6
90.2	Oil meal, old process	30.2	32.0	6.9	77.7	108.4	33.2	27.4
91.0	Oil meal, new process	31.5	35.7	2.4	72.6	120.0	34.8	26.8
90.1	Kafir	5.2	44.3	1.4	52.6	35.8		
86.4	Kafir corn heads	4.2	42.4	1.2	49.3	29.4		
87.9	Millet	7.1	48.5	2.5	61.2	34.8	13.0	6.6
89.6	Oats	10.7	50.3	3.8	69.5	36.4	15.6	9.6
88.0	Oats ground	10.1	52.5	3.7	70.9	39.4	15.2	10.0
91.2	Oat middlings	13.1	57.7	6.5	85.4	51.8	45.0	30.6
93.5	Oat dust	5.1	32.8	2.3	43.1			
89.5	Pea meal	16.8	51.7	0.7	70.1	64.6	16.4	19.8
89.2	Rice polish	7.9	58.6	5.3	78.4	38.0	53.4	14.2
90.3	Rice bran	7.6	38.8	7.3	62.8	38.0	5.8	4.8
91.3	Rye	9.5	69.4	1.2	81.6	36.2	17.2	11.6
86.9	Rye flour	5.6	72.2	0.5	78.9	21.4	16.4	13.0
88.4	Rye bran	11.2	46.8	1.8	61.8	46.6	45.6	28.0
88.2	Rye middlings	11.0	52.9	2.6	69.7	45.8	24.6	19.2
	Rye distillers grains	14.6	45.7	4.5	70.4			
88.3	Soy beans	29.1	23.3	14.6	85.2	107.3	20.8	25.2
92.0	Spelz, emmer	10.0	70.3	2.0	84.8	36.8	15.2	11.4
89.5	Wheat	8.8	67.5	1.5	79.7	38.0	11.0	17.4
88.1	Wheat bran	11.9	42.0	2.5	61.5	49.2	53.8	30.4
90.0	Wheat middlings	16.9	53.6	4.1	79.7	61.4	24.4	19.2
88.0	Wheat shorts	13.0	45.7	4.5	68.8	54.0	52.6	30.6
90.1	Red dog flour	16.2	57.0	3.4	80.8	58.8		
	Miscellaneous							
74.1	Porto Rico molasses	1.4	59.2		80.6	8.6	2.4	73.6
79.2	Sugar beet molasses	4.7	54.1		58.8	29.0	1.0	112.6
91.5	Dried blood	60.8		2.5	66.4	270.9	27.0	15.4
93.0	Tankage	50.1		11.6	76.2	172.4	278.0	6.0
9.1	Field pumpkins	1.0	5.8	0.2	7.2	4.2		

II. Practical Feeding

TWO CLASSES Feeds for farm animals are considered in two classes, concentrates and roughage.

Concentrates are the grains, bran, oil meal, and such highly nutritious condensed feeding stuffs. Roughage is the more bulky, coarse-material feed, such as hay, corn fodder, forage, silage, roots, straw, etc.

BULK NEEDED All animals, man included, need bulk as well as concentrated nourishment. But the needs of different animals vary greatly. All do not have the same capacity for bulky food. The horse, for instance, has a stomach that holds about 19 quarts. But the ox has room for about 200 quarts,* the sheep 31 quarts; and the hog only about 8½ quarts, on the average. Now the ox and the sheep are cud-chewers, with large capacity for storing food during the process of digesting. But the horse and the hog can more quickly get their food out of their stomach and into the intestines, thus making room for more. Of all the farm animals the pig is the least suited to bulky feed, because of its small stomach. The horse manages very well; but to insure digestion, his morning and noon feeds should always be light and the bulk feed should never be fed right after the grain, for the grain would then be crowded out of the stomach before the poor animal had time to fully digest it. He should have his water first, then a little hay, and then the grain.

Bulk distends the walls of the intestines, and thus helps those tissues to absorb the food elements. It also keeps the concentrated feed from passing too quickly through the intestines, so that it can not be fully digested, i. e., put in solution, for the walls to absorb it, but hurries out and is wasted.

Some good rules for feeding bulk are here given, but with any rule we must make allowance for varied working conditions. These are general:

For the work-horse... 1 part concentrate to 1 part roughage.

" beef steer 1 " " 1 " "

" dairy cow 2 " " 3 " "

" sheep 1 " " 2 " "

" Swine..... Feed concentrates almost entirely.

For practical purposes compare here the rations given (for horse) page 48 (dairy cow) page 38, (beef steer) page 42, (sheep) page 49, (swine) page 55.

As a rule it is more economical to raise the roughage and buy the concentrates, if buying is necessary. Select your feeding crop and then compare it with the table, page 29, for its feeding value, and see what concentrates would best combine with it. Compare a number of concentrates together, and then make final choice of the ones you can get the easiest and cheapest. Remember in this table what each element will do for you; especially—

Protein—Makes and repairs lean tissues, hair, hoof, casein in milk, etc.
THIS IS USUALLY AN EXPENSIVE ELEMENT.

Carbohydrates and fats—Keep body warm, supply working power, make surplus fat. **THESE ARE USUALLY FAIRLY CHEAP ELEMENTS.**

*Compare Strangeway's Anatomy.

CORN Corn is easily the king of all grains. It is the great energizing, heat-giving, fattening food for farm animals. But, it does lack material for bone and muscle; (compare the table and see how low it is in crude protein and mineral matter). Animals like it because of the rich, palatable oil, which makes it so agreeable after it is masticated. But this oil becomes rancid after corn is ground to meal; so it should be ground only as needed, and will then never be musty or stale, but will be properly relished by the animals.

OATS Oats are next to corn in the amount grown in this country. They are the safest of all feeds for horses—valuable also for the dairy cow; but oats are high priced. However, whatever the price, be sure you know what you are buying, and run over carefully the following points of difference in oats:

Good Oats.	Inferior Oats	New Oats.	Old Oats.
Clean	Dirty	Shiny husks	No lustre
Even size	Uneven size	Earthy smell	Free from odor
Short	Small	Sweet, milky taste	Bitter taste
Plump	Flat	Soft	Hard
Heavy	Light	Bearded	Beards nibbed off
Hard	Soft	Down-covered kernel	Husks drawn tight
Thin-skinned	Coarse-skinned	Ends of grain soft	Ends of grain sharp
Dry	Mouldy	Flour juicy	Flour dry

CRUSHED OR BRUISED OATS

Give good oats always, and oats of the proper age where possible. It is a very important matter that they should be crushed for all horses. Crushed oats are a great benefit to any horse. They are eaten better if the animal is delicate and greediness becomes a matter of lesser importance. The grain digests better and goes farther as a nutrient food. It will save considerable

Cow Pea

Field Pea

Soy Bean

waste; and the process of going through the crusher separates a lot of dirt that, even in "clean" oats, will surprise you. Crushing oats assists mastication and digestion; and the grain does not pass whole through the stomach and bowels undigested, as is often noticed when whole oats are fed. Crushed oats will furnish one-third more nutriment, measure for measure, than whole oats.

How often are oats or hay fed intelligently? How often does the ordinary stableman know whether they are good, bad, or indifferent? The

farmer is supposed to know; but how often is there one who has had a bad year with his crops? His hay has been hauled in before an expected storm when it was but half cured, and stowed away in the barn to become mow-burnt and musty; or his oats may have turned out to be about all beards and but little kernel. It would pay him better to throw such hay out and buy from his more fortunate neighbors; but does he do it? Not once in twenty cases, but while he knows that it is not good, he goes ahead and feeds it, believing that he is economizing when he is certainly inviting trouble and loss. The food should be most thoroughly inspected.

BRAN Here is a feed not generally understood, so that farmers sometimes misuse it. This is the husk or skin of the wheat grains. The outer part acts as a laxative, and this power is increased by warming—see page 15 for directions for Bran Mash. Bran fed dry will counteract the bad effect of too much physic. It is good to soften water that is hard, or to purify water that is suspected. Just stir in a few handfuls. As a corrective for animals it stands at the head of all feeds, when given not too often and at the temperature of the body. It is especially good for all animals burdened with young, also excellent for milk cows. It is good to combine with corn or similar fattening feeds, as it is a bone and muscle maker, without being a fattener. It has a good deal of bulk for a concentrate, so must be used accordingly.

Bran is especially useful to aid digestion of starchy foods. It contains the mysterious substance called diastase, a digestive ferment which converts starch into sugar.

Rape

Sand Vetch

LINSEED MEAL Linseed meal is another mill product. Use only a little at a time, because it is rich in crude protein, and also is somewhat laxative. It helps to give that good pliable feel to the hide, and the glistening coat that speaks so well for general condition. A little is better than much, for instance:

For the horse	$\frac{1}{2}$ to $1\frac{1}{2}$ lbs.	per day (more will make him soft).
" " dairy cow	1 to 2 lbs.	" "
" " fat sheep	$\frac{1}{4}$ to $\frac{1}{3}$ lbs.	" "
" " steer	2 to 3 lbs.	" "
" " hog	$\frac{1}{4}$ to $\frac{1}{3}$ lbs.	" "

HAY It is to be hoped your hay comes from a mixed meadow, such, for instance, as red top, timothy and orchard grass, with a little alsike and medium red clover and some white clover; then you will get big crops, and the livestock will benefit by the aromatic, palatable blending. Good hay is very important. Feeding hay that is inferior, mouldy, mow-burnt, or dirty is a common cause of poor condition of farm animals, loss of spirits, loss of working capacity; and in horses causes broken wind, and heaves.

MUSTY AND ERGOTED GRAINS

Sometimes serious brain diseases are caused by moldy food, or food that is wormy. Ergot, the black mold on rye and such grains (maybe you call it "spurred rye"), produces the poisoned condition called ergotism. for which see page 141 under Diseases. The big caution is—Avoid all smutty and moldy foods for livestock.

LEGUME CROPS The general grains—corn, oats, wheat, rye, barley—and the grasses—timothy, prairie hay, etc.—are great energizers and fatteners. You noted their high per cent. in the carbohydrates column. Another class of feeds, the legumes—alfalfa, clover, vetch, cow pea, soy bean, etc.—represent muscle and bone builders, being rich in protein, also in lime, which latter element is important to all farm animals. In these two elements, protein and lime, the legume crops are the strongest of all raised on the farm. We know that legume crops are a positive necessity if we expect to keep up the fertility of the soil, so on this as well as our livestock account, the legumes must claim the farmer's closest attention. We haven't the space here to get enthusiastic. But take it to heart, what the farmer of today doesn't know about legumes, and especially in this alfalfa day, what he doesn't know about alfalfa, he must make short work to find out, or he'll be left far behind the procession.

ALFALFA, ALFALFA, ALFALFA!

The song of songs would be the song of alfalfa, the wonderful gift of nature to crop-tilling man. No other roughage on the farm can compare with it in variety of uses. Fed to fattening steers, it tends to rapid gains, at far less use of expensive concentrates. Alfalfa hay for dairy cows gives the very best material for milk production. Alfalfa leads as a roughage for sheep. It is even useful for fattening hogs, or tiding them over the winter—and the hog, you know, is an almost total abstainer from ordinary roughage. Horses at slow and steady work can make good use of alfalfa, though it is unsuited to road animals. In the

Alfalfa

West alfalfa "has revolutionized sheep fattening as an industry." It may be grazed to some extent, but it is really a hay crop. Alfalfa is invaluable for soiling, as so often practiced in the economical East. It furnishes a nearly continuous summer forage. Alfalfa can even be insilaged; but better leave that to corn, and cure the alfalfa. The first crop coming at a rainy season is a little hard to cure, but the use of a hay cap will save that trouble largely. Once well started it is a sure crop.

Advice: Study alfalfa.

ROOTS AND TUBERS We, in the United States, have not learned to rely on roots and tubers for feeding livestock, in spite of the excellent showing of Canadian, English, and Continental European feeders. The truth is roots are expensive, on account of the high per cent. of water. Of course, based on dry matter, a pound of dry matter in roots would have about the same value as a pound of corn, wheat, oats or barley. The animals like roots and tubers, to be sure—just see that dairy cow go for those carrots. They have a tonic value, as well as being nutritious. Usually they are cut or sliced and put into the feed

Home-made Root Chopper

boxes with a little meal over them. In Canada and England the plan is to pulp them up and spread in alternate layers, first pulp then some cut straw or hay—a sort of scalloped stock-food, just as the housewife scallops oysters. This is a good way to get the fullest possible use of straw; and with only a small amount of concentrate used, the expense is not so great as might be, either. There is plenty of room for experimenting with roots for livestock; for we have yet to equal root-feeding countries in the general average of beef and mutton quality.

Note one fact in root feeding: It tends to a more watery flesh, which is a better preparation for fattening; and is always an advantage for breeding animals. If then we must be slow to utilize roots on account of the expense in feeding, it will certainly pay to consider them more fully for use for breeding animals, and for preparing animals for that final fattening or "finish," since the watery tissue is a real advantage with both of these classes, the "breeders" and "feeders."

1. Feeding the Dairy Cow

ALWAYS HUNGRY The dairy cow is a big feeder. But if you give her legumes such as alfalfa, clover, etc., rich in crude protein and mineral matter, you can do with less concentrates; and these are the expensive feed for the dairyman.

With legumes so used, it is best to use also a succulent roughage, such as silage, or palatable nourishing roots, after the European system. This in turn reduces the amount of straw, corn stover or low grade hay to be used, and of course relieves the cow of just that much extra strain in digestion.

A rich legume will take the place of half the usual expensive concentrate, provided corn silage and roots are included. Prof. Henry estimates on this basis that about 6 lbs. of concentrates would be enough for the average dairy ration daily.

Start in once more and read the above all over again; for it gives you the very cream of modern scientific conclusions on dairy feeding.

IN WINTER You see, the dairy cow must have lots of protein. If in full milk she needs nearly 2 lbs. of digestible protein per day; but instead of purchasing such feed as bran, shorts, oatmeal, gluten meal, etc., give her common farm feeds like clover, alfalfa, cow peas, and oats; all of which are rich in protein, and easy to grow on the farm. Add to this corn silage. If your silage is heavily eared, you can even dispense with grain, and will get nicely through the winter. Well cured clover or alfalfa hay is about the best bulky feed to give during the winter. Timothy, of course, doesn't contain enough protein for good milk yield. Remember that roots, mangels, turnips, pumpkins and other green vegetables will help out on the milk production, and keep the cows happy.

IN SUMMER In summer you have your pastures; but grow corn and other crops in summer for green feeding when pastures are short—then you won't lose out on your milk contracts; for such crops make well balanced feed and are available on the farm from May to October. One man by cropping all his land, cutting out all pasture and soiling the crops, that is cutting and bringing them to the barnyard for feeding, just about doubled the number of cows he could provide with acreage,—of course doubling the size of his dairy. This is getting to be quite the favored method in dairying,—cutting down pastures, but raising green crops and bringing these to the barnyard or feed lot (called the "soiling" system) right to the animals. Of course there is more labor, (you'll need an extra farm hand), but with a larger herd, more home grown feed and little to buy, that extra cost for labor is drowned out in the milk pail. On the soiling system with no pasture, each cow consumes from 75 to 100 lbs. of forage daily.

THE MODERN SILO Don't neglect the silo. Every dairy farm should have one. Concrete is best, but staves will do when fitted air-tight and strongly hooped together. You can estimate the size you need by remembering that well settled silage counts 45 lbs. to the cubic foot. The cost of silage varies from \$1 to \$2 a ton,—it shouldn't go over that. This is where you save money over and over again, and at the same time make money on increased milk production. So don't neglect the silo. If you haven't one, build it next summer and pack it completely. A round silo is best, as it gives the greatest capacity for the least area and building material, and there are no corners for the silage to spoil in. Make it 30 ft. high, if possible, and never under 20 ft., for height increases the pressure, and the silage will keep better. Feed at least 2 ins. from the top surface every day. Estimate 5 sq. ft. (2 ins. deep) to each cow. Thus a herd of 20 would need a feeding surface of 100 sq. ft., that is, a 12 ft. diameter silo. Don't have too large a diameter, or you will lose a good deal of silage through molding. Better have two small silos than one too large in diameter,

Building a Stave Silo

STICK TO A GOOD SYSTEM

Milk cows should have all the feed they can digest without undue waste in excrement. Good feed and care will make all of 50% difference in the final production of the dairy herd. Prof. Eckles, of University of Missouri, says the average yearly production could be increased from one-half to three-fourths simply by following better methods of feeding. Of course the ration must be good, that is properly balanced in the elements it contains for milk production; and it must be palatable to the animals, and cheap as possible for the owner.

A STORY FROM CORNELL

At Cornell experiment station they have a story of a certain "up-state" farmer with a herd of poorly nourished cows, from which he got a weekly milk yield of about 109 lbs. testing 4.56% butter-fat. The whole herd was taken to the experiment station, and for two years put on liberal feed and care, and the average milk yield jumped to 155 lbs. per week for the herd, with a butter-fat percentage of 4.7 average. At the end of these two years the herd was sent back to the owner, and for another year records were kept to see the result under the owner's "slack feeding" methods: The average went back to the old meagre standard.

HERE'S FROM WISCONSIN

Wisconsin station has been making some good dairy feeding tests, with results as follows:

25 cows: 1 year record—

Average milk yield	8,439.6 lbs. (363.32 lbs. butter-fat).
Average value of milk	\$111.76
Average cost of feeding	50.34
Average net profit	\$ 61.42

In this test the grain ration used was as follows: Wheat bran 3 parts, corn meal 4 parts, distillers' grains 3 parts. Small amounts of oats, oil-meal and brewers' grains for variety.

Tests of individual cows showed the following: High producers use large amounts of dry matter, with as much as 2½ lbs. digestible protein daily. But low producers, and those advanced in milking, could make economical use of considerably less grain and cheaper feed stuffs in general.

Its all in the cow,—and the feeder.

HOW CON- DITIONS VARY

In some countries where conditions do not vary much, in Denmark for instance, it would be easy to lay down a few definite rules. In this country the feeding problem is different for almost every dairy. Local conditions, the feeds cheapest and easiest to get, the crops raised on the farm, all enter into the problem. The ration must be made up to fit the dairy needs; but it must be selected from feeds that are comparatively easy to get and cheap. The following have been made up to suit conditions found in different parts of the country, making use of available feeds and little or no allowance for pasture. Of course, with a considerable pasture, there is practically no fair rule for figuring. In these rations, the amount of mixed feed or concentrates is estimated at 1 lb. a day for each 3 or 3½ lbs. of milk. Feed the cow according to her dairy test. Put into each cow what you think you can get out of her: Find out her full capacity, then estimate about 50% to 60% of that ration will be needed to maintain her normal weight. If you feed her less than capacity you don't hurt the cow, but you do cut off her production for you, that is, your profit,

Some Practical Dairy Rations

EASTERN STATES.

200 lbs. bran, 300 lbs. corn chop*, 300 lbs. buckwheat middling. For roughage hay 10 lbs. per head, and stover as desired.

400 lbs. distillery grains, 300 lbs. corn, 100 lbs. bran. For roughage mixed clover and timothy 10 lbs. per head, and corn stover as wanted.

400 lbs. bran, and oats, 200 lbs. corn chop, 200 lbs. Unicorn dairy feed. For roughage 30 to 35 lbs. silage, and clover hay as wanted.

300 lbs. Ajax, 200 lbs. buckwheat middlings, and 300 lbs. corn chop. Silage 25 lbs., hay as wanted.

400 lbs. corn chop, 100 lbs. bran and 200 lbs. Ajax Flakes. Silage 25 to 30 lbs., hay as wanted.

400 lbs. corn chop, 300 lbs. Three D Grains, 100 lbs. bran, 200 lbs. oil meal, hay as wanted.

600 lbs. corn and cob meal, 400 lbs. dried grains, mixed with molasses fed each day. For roughage hay, 10 lbs., corn stover 10 lbs., beets 20 to 30 lbs. per head.

600 lbs. ground corn, 400 lbs. Buffalo gluten. For roughage, silage and clover hay.

400 lbs. corn chop, 200 lbs. cottonseed meal, 100 lbs. oilmeal. Silage 25 lbs., hay as wanted.

300 lbs. corn chop, 200 lbs. bran, 100 lbs. oats, 100 lbs. oilmeal. For roughage, 12 to 15 lbs. clover hay, and corn stover as wanted.

300 lbs. corn chop, 200 lbs. bran, 200 lbs. buckwheat middlings, 100 lbs. oilmeal. For roughage, all the mixed hay wanted.

400 lbs. corn chop, 300 lbs. oats, 100 lbs. cottonseed meal. Silage 30 lbs., hay as wanted.

400 lbs. corn and cob meal, 300 lbs. oats, 100 lbs. cottonseed meal. For roughage, 30 lbs. silage, hay as wanted.

500 lbs. corn chop, 200 lbs. gluten feed, 100 lbs. malt sprouts. For roughage, clover hay as wanted.

300 lbs. corn chop, 300 lbs. dried brewers' grains, 200 lbs. malt sprouts. For roughage, 10 lbs. mixed hay, corn stover as wanted.

SOUTHERN STATES

400 lbs. corn hearts, 100 lbs. cottonseed meal, 200 lbs. bran and oats. For roughage, 30 lbs. silage and cow-pea hay.

Mixed 400 lbs. corn-chop, 200 lbs. oats, 100 lbs. distillery grain, 100 lbs. oilmeal. For roughage alfalfa, all each cow would eat.

400 lbs. corn-chop, 200 lbs. bran and 100 lbs. cottonseed meal. Silage 30 lbs., hay as wanted.

300 lbs. corn-chop, 200 buckwheat middlings, 200 lbs. bran, 100 lbs. oilmeal. For roughage, all the clover hay wanted.

400 lbs. corn-chop, 300 lbs. bran, 100 lbs. cottonseed meal. For roughage, 30 lbs. silage, clover hay as wanted.

400 lbs. corn-chop, 300 lbs. bran, 100 lbs. cottonseed meal. For roughage, 12 to 15 lbs. alfalfa and Johnson grass hay, 5 lbs. cottonseed hulls.

CENTRAL STATES

500 lbs. corn-chop, 400 lbs. bran, 100 lbs. cottonseed meal. For roughage, 30 lbs. silage, 15 lbs. alfalfa and all the clover hay wanted.

400 lbs. corn-chop, 300 lbs. bran, 100 lbs. gluten feed. For roughage $\frac{3}{4}$ part silage to 1 part clover hay.

*Corn-chop is corn ground reasonably fine. It contains the bran.

300 lbs. corn-chop, 500 lbs. oats and peas. For roughage, etc., silage (30 lbs per head), and clover hay as wanted.

300 lbs. corn-chop and 300 lbs. oats, 150 lbs. cottonseed meal. For roughage, 15 to 18 lbs. prairie hay, oat straw to pick over. Oilmeal would help above ration.

400 lbs. ground kafir corn, 100 lbs. oats and 100 lbs. bran. For roughage, 30 lbs. silage, and mixed hay as wanted.

300 lbs. corn-chop, 200 lbs. ground oats, 200 lbs. bran, 100 lbs. oil meal. For roughage, 12 to 15 lbs. clover hay per head and corn stover as wanted.

400 lbs. corn-chop, 200 lbs. Union grain, 200 lbs. bran. For roughage, 20 lbs. silage per head with hay as wanted, mixed timothy and clover.

400 lbs. corn-chop, 200 lbs. gluten feed, 200 lbs. bran, 100 lbs. oil meal. For roughage, 10 to 12 lbs. clover hay, corn stover, all the cow will eat.

300 lbs. corn-chop, 300 lbs. hominy, 100 lbs. oil meal, 100 lbs. cottonseed meal. For roughage, 20 lbs. corn silage, and mixed hay as wanted.

300 lbs. oats and bran, 400 lbs. corn-chop, 100 lbs. oil meal. Silage, 30 lbs., hay 8 to 12 lbs.

200 lbs. malt sprouts (to be soaked in water several hours before using), 300 lbs. gluten feed, 200 lbs. bran, 200 lbs. corn-chop. For roughage, 35 to 40 lbs. silage, corn stover as wanted.

200 lbs. corn-chop, 10 lbs. distillery grains, 100 lbs. bran. For roughage, 30 to 35 lbs. silage, clover hay as wanted.

100 lbs. cottonseed meal, 200 lbs. bran, 200 lbs. corn-chop. For roughage, 10-12 lbs. timothy and clover hay, cottonseed hulls as wanted.

100 lbs. cottonseed meal, 400 lbs. bran, 400 lbs. corn-chop, 100 lbs. oil meal. For roughage, 10 lbs. millet and cow-pea hay (half and half). Corn fodder as wanted.

300 lbs. corn-chop, 300 lbs. bran, 200 lbs. gluten feed. For roughage, 30 to 35 lbs. silage, clover hay as wanted.

NORTH CENTRAL STATES

400 lbs. corn-chop, 200 lbs. Continental gluten, 200 lbs. ground oats. For roughage, 30 lbs. silage and all the hay wanted.

400 lbs. corn-chop, 300 lbs. bran, 100 lbs. cottonseed meal. Silage, 30 lbs., hay 8 to 10 lbs., corn stover as wanted.

500 lbs. corn and cob meal, 300 lbs. bran, 200 lbs. cottonseed meal. For roughage, 30 lbs. silage, 8 to 10 lbs. mixed hay, corn stover as wanted.

400 lbs. corn-chop, 300 lbs. oats, 100 lbs. rye. For roughage, 30 lbs. silage, alfalfa as wanted.

300 lbs. corn-chop, 300 lbs. oats, 100 lbs. rye, 100 lbs. cottonseed meal. For roughage, 30 lbs. silage, mixed hay as wanted.

400 lbs. corn-chop, 300 lbs. bran. For roughage, 30 lbs. silage, 5 lbs. alfalfa hay, 5 lbs. clover hay.

WESTERN STATES

300 lbs. corn-chop, 300 lbs. bran, 200 lbs. oil meal. For roughage, timothy and wild prairie hay.

300 lbs. corn-chop, 300 lbs. bran, 150 lbs. oil meal. For roughage, 10 lbs. hay, 10 lbs. stover.

400 lbs. corn-chop, 300 lbs. bran, 100 lbs. oil meal. For roughage, silage (30 lbs. per head), and mixed clover and timothy with some corn stover.

400 lbs. corn-chop, 300 lbs. bran, 100 lbs. cottonseed meal. For roughage, 40 lbs. silage and 5 lbs. hay.

600 lbs. oats and barley, 100 lbs. oil meal, 100 lbs. cottonseed meal. For roughage, 20 lbs. silage, 10 lbs. timothy hay and corn stover as wanted.

300 lbs. gluten feed, 400 lbs. corn-chop, 100 lbs. bran. For roughage, 30 lbs. silage, and all the hay wanted.

300 lbs. Ajax Flakes, 300 lbs. corn and cob meal. For roughage, 30 lbs. silage, 5 to 8 lbs. clover hay, shredded corn stover as wanted.

300 lbs. barley (or corn-chop), 200 lbs. bran, 200 lbs. oats, 100 lbs. oil meal. For roughage, 10 to 15 lbs. clover and timothy hay mixed, corn stalks and nubbins as wanted.

300 lbs. corn and cob meal, 100 lbs. soybean meal. For roughage, 40 lbs. turnip, 8 to 10 lbs. millet hay, corn fodder to pick over.

PACIFIC COAST

600 lbs. barley, 200 lbs. bran (feed this 1 lb. to each 2½ lbs. milk yield). For roughage, 10 to 15 lbs. clover hay.

400 lbs. barley, 400 lbs. bran. For roughage, hay, carrots, and pasture through season, amount not known.

300 lbs. barley, 300 lbs. shorts, 100 lbs. oil meal. For roughage, all the alfalfa wanted.

300 lbs. ground barley, 300 lbs. alfalfa meal with 25 lbs. roots and kale, 10 lbs. mixed hay (clover, timothy, velvet grass).

2. Feeding Beef Cattle

THE BEEF PROBLEM In feeding beef cattle we have a different problem. Instead of milk, we want beef, liberal in quantity, and with fat distributed between muscles and fibre rather than in loose "rough tallow," as it is called by the butcher.

Beef cannot reach top prices for meat that is tender, juicy and toothsome unless it has this plentiful "marbling" or intermingling of fat with fibre,—the distinguishing mark of good beef type.

Part of the beef problem is to get development where we want it, and not where we don't,—a liberal laying on of expensive future "cuts," but less cheap neck and wasteful leg bone. Experiments have been variously made, with corn, wheat, oats and cottonseed meal, linseed oil meal, distillers' grains, sugarbeet pulp, dry roughage, such as corn stover and clover, timothy hay, alfalfa, silage, and roots such as cassava, sweet potatoes, etc.

But the most significant, perhaps in one sense the most expert, tests in feeding beef cattle were conducted in Great Britain, and reported by Ingle (1909), covering a period of over seventy years. Of the 200 odd cases reported we select a few specimens from those given by Prof. Henry. Rich nitrogenous concentrates were commonly used, such as linseed meal, cotton meal, brewers' grains, etc., but a comparatively small quantity, usually about 6 or 7 lbs. was fed. Roots were heavily used as is the English and European custom, which recognizes them as watered concentrates. A good big portion of straw and hay, this latter cut and mixed with cut roots and meal, was fed daily, along with a small quantity of cornmeal or barley. In America we find root feeding expensive; but it is a fair question today, can we not, as Prof. Henry suggests, get equal results with smaller allowance of corn and more liberal use of clover and alfalfa hay, and succulent corn silage?

These reports are averaged from tests of from 3 to 10 head of cattle in each case. It is probable, as Prof. Henry points out, that the cattle are usually in good flesh when the British feeder begins, being mature bullocks, 2 to 5-year-olds. The feeding period is comparatively short, ranging from 3 to 4 months. The average total gain, and the average daily gain, for each group fed, is given, but not the weights at beginning and end of the period, simply the average. Thus:

Breed	Age	Av. Weight	Feeding Period	Average Ration	Av. Daily Gain	Av. Total Gain
	Years	Lbs.	Days		Lbs.	Lbs.
Gal-loways	2-3	1,003	100	Oat Straw 7.0 lbs. Swedes 150.0 lbs.	1.4	143
Ab'rdeen-Angus		1,054	112	Cottonseed Cake 3.0 lbs. Oat Straw 8.0 lbs. Mangels 108.8 lbs.	1.9	211
Short-horn	2-5	1,452	98	Linseed Cake 2.4 lbs. Corn Meal 2.0 lbs. Straw 14.0 lbs. Swedes 171.0 lbs.	3.0	292
Short-horn	3	1,326	123	Cottonseed Cake 5.0 lbs. Linseed Cake 3.0 lbs. Barley 1.0 lbs. Hay 16.2 lbs. Swedes 40.5 lbs.	2.4	294
Hereford		1,294	107	Peanut Cake 2.7 lbs. Oats 2.7 lbs. Barley 2.7 lbs. Clover Hay 14.0 lbs. Swedes 45.0 lbs.	2.2	235
Hereford	3	1,261	112	Bean Meal 3.0 lbs. Oats 3.0 lbs. Barley 3.0 lbs. Straw 4.1 lbs. Hay 6.9 lbs. Swedes 39.5 lbs.	2.4	263

FATTENING RATION The fattening ration should not be too high in protein; although animals thin at the start should be supplied with abundant protein to develop muscular tissue in prepara-

tion for fattening. Kellner suggests for this purpose the nutritive ratio 1 to 6 (see page 25 on nutritive ratio). For mature fattening cattle the ratio should not vary much from 1 to 10 or 12. Where the feeding period covers six months, avoid getting cattle on full feed for the first month or six weeks; for they will not show for the early expense at the close of the full feeding term. Corn is by far the best concentrate for quickly filling the tissues with fat, and insuring a high quality of "marbling" in the beef. It is therefore, without question, the finest of finishing materials. Where possible feed it in the shock. With the addition of

Fed right

nitrogenous roughage, such as clover or alfalfa hay, or a corresponding concentrate such as linseed or cottonseed meal, the value of the corn is increased, and the feeding period is shortened.

Note that in some cases absolutely no concentrate was fed, but roots were used (roots are recognized as "watered concentrate") in heavy quantity, along with straw and hay. These cases are merely typical. It would be interesting to any feeder to consult and study carefully the full report of Ingle.

If instead of clover or alfalfa roughage, timothy, sorghum, or kafir corn must be substituted, add 2 or 3 pounds of concentrate like cottonseed meal or linseed, to make up the deficiency. Steers finishing with corn, but on pasture, might have the rich linseed meal (2 or 3 pounds) added to their ration during the last two months of the finishing term. Fattening gains usually cost about $\frac{1}{4}$ more per day in winter than in summer. Most feeders feed grain and roughage twice a day in winter; and in summer, grain once a day.

Here are three specimen rations vouchsafed for by Prof. Linklater of Oklahoma College:—

Rations for 1,000-lb. Fattening Steer

FEED	Dry Matter	Protein	Carbohydrates	Fat	Nutritive Ratio	FEED	Dry Matter	Protein	Carbohydrates	Fat	Nutritive Ratio
	Lbs.	Lbs.	Lbs.	Lbs.			Lbs.	Lbs.	Lbs.	Lbs.	
Feeding Standard RATION No. 1.	30.00	2.5	15.00	0.5	1:6.5	Feeding Standard RATION No. 2.	30.00	2.5	15.00	0.5	1:6.5
Prairie hay—10 lbs.	9.44	0.37	4.36	0.09		Alfalfa—18 lbs. . .	16.49	1.98	7.13	0.22	
Sorghum fodder—8 lbs.	7.54	0.20	3.59	0.07		Corn—10 lbs. . . .	8.91	0.75	6.67	0.43	
Corn—10 lbs. . . .	8.91	0.79	6.57	0.43			24.40	2.77	13.80	0.65	1:5.2
Cottonseed meal—3 lbs.	2.75	1.11	1.50	0.37		RATION No. 3.					
						C'n's'd hulls—20 lbs.	17.78	0.06	6.62	0.34	
						C'n's'd meal—5 lbs.	4.59	1.86	0.84	0.61	
	28.64	2.48	15.07	0.96	1:7		22.37	1.92	7.46	0.95	1:5

WATER The water supply should be pure and abundant, not less than 10 gallons a day for each head of cattle.

SALT Salt is a necessity to animals under heavy feeding. On the whole, tests indicate advantage in keeping salt before them all the time, as then they will not take an over quantity. Page 46 we show how to mix a medicated stock salt (9 parts common barrel salt to 1 part Conkey's Stock Tonic) at a cost of less than $2\frac{1}{2}$ cents a pound. This mixture should be kept where the stock can help themselves any time. It not only prevents indigestion, but aids in keeping stock worm-free. It also wards off many dangerous diseases and acts as a general conditioner.

A TAXING PROCESS Fattening is a taxing process. Read again the comment on digestion and palatability. Be prepared to find fattening cattle slowing down after a few weeks of the fattening program,—not relishing their food so fully as at first, and not making uniform gains. Fattening is an unnatural process; and it takes the feeder's wits to get the upperhand of old nature. Read again the comments on Stock Tonic (see index), and make sure you get the worth of the fattening feed by mixing with it this tonic and appetizer. The animal's crowded paunch is a tax on his powers. Notice his audible breathing. The absorptive powers of the tissue are being taxed to their utmost. It is necessary to come to the aid of nature. Conkey's Stock Tonic is an alternative and

appetizer. It is an excellent tonic, and acts directly on the walls of the blood vessels,—increasing their contractile power and thus invigorating circulation. While the dose should be only $\frac{1}{2}$ tablespoon in the feed twice daily the first two days, after that it should be increased to 1 full tablespoonful at each feeding. Full directions are given on the package. There is no danger in the use of this Stock Tonic. It is scientifically compounded of pure drugs, each a specific. It is already mixed, in virgin dry state,—not contaminated and made expensive by the addition of a useless “filler.”

The fattening process is an expensive one; and it is necessary for the beef grower to cut it down to as short a time as safely profitable, and thus to help out nature, if he expects to get the worth of his time, investment and labor.

CALVES Calves destined for the butcher should be fed whole milk from the dams, but not more than 2 quarts three times a day, lest indigestion and scouring follow. As the calf grows, increase gradually, but feed sparingly the first month. The calf should be taught to eat solid food, such as shelled corn, whole oats, wheat bran, oilmeal, hay, etc., before ever weaned, simply by rubbing the mouth with some grain after each milk meal. Do not put grain in the milk, for it will be swallowed without chewing. The calf has good grinders, and at 4 to 6 weeks can do its own grinding. After weaning it can be put at once on regular ration of the above feeds, with alfalfa hay or clover. All calves are justly entitled to clover; and if there is any shortage, they should not be the

animals to suffer. In summer the grain ration can be cut down, and the animal put on pasture of white clover and blue grass or alfalfa. There is nothing like grass for fleshmaking. In winter, silage or roots will keep these youngsters sappy and growing. In cases where the whole milk cannot be spared for the calves skim milk may be substituted, with lower though satisfactory gains in development. Corn meal or some fattening grain should be used with a skim milk ration.

Of course a calf intended to grace the dairy should not be crowded, but simply fed for normal sturdy development. Never let a dairy type

calf go above 2 lbs. of grain daily, which is the very limit. Too heavy fattening feed will tend to change the type entirely; and instead of a dairy beauty, you'll have a young beef to fit for market.

A CONKEY CALF To make a sturdy calf, add to the ration a scant dose of Conkey's Stock Tonic. Just a little will be enough, say twice daily a half-tablespoonful to three or four youngsters. The Stock Tonic will destroy worms; and as a tonic and appetizer will insure full body development from the food taken into the young animal's stomach. This is a time when you want to watch for every possible gain. A young calf will make better gains for grain than an older calf, and should have all it will eat.

The uniformly fine and safe results from the moderate use of the Stock Tonic with young animals, calves, lambs, etc., is a positive test of its freedom from dangerous drugs, and guarantees its safety for more or less continuous periods as a conditioner for any animal.

BABY BEEF It takes two to make good baby beef—a feeder who is a specialist at it, and a good specimen of a beef breed. Both feeder and calf must do their part. Buyers show a strong liking for choice light yearling stock, that is, "baby beef," as against heavy-weight but long fed steers; and after all your trouble with the latter, getting them choice and smoothly finished, the price is apt to be lower than it should be; while "baby beef" is a specialty worth any man's attention.

GREGORY'S CALF

Gregory's experiment at Iowa College developed an 800 lb. calf in one year, treating as follows: After the first suckling, the calf was taken from the cow, but for two weeks received the cow's milk whole, then changed to skim milk gradually. For first month about 4 quarts were allowed to a feed, then raised to 6 quarts. Ground corn and oats, or bran and ground corn, were allowed soon as the calf could eat grain. During an attack of scours blood flour (1teaspoonful) was allowed with the milk; blood flour was recommended for unthrifty calves. For roughage this calf had clover or alfalfa.

Making good "Baby Beef"

KENNEDY'S CALF Everybody has heard of Prof. Kennedy's calf, Shamrock II, Grand Champion steer of the 1910 International. An Aberdeen Angus, calved January 10, 1910, according to the record, he was taken to Iowa State Agricultural College May 1. At that time he weighed 346 lbs. He was put on a nurse cow, and allowed the run of a grass lot at night, keeping to the barn during the day. Up to September 1 he was fed good clover hay, all he would eat (the state

paid), and a grain ration of 3 parts corn, 2 parts wheat bran and 1 part oil meal. Weight September 1, was 822 lbs. He was then put on two nurse cows, fed green corn, stalks and ears, clover hay and roots, with boiled wheat and oats for grain. On October 1 he weighed 941 pounds; November 1, 1,060 pounds. During this month he was eating from nine to eleven pounds a day of the cooked feed, about twenty-five pounds a day of roots and five pounds of clover hay, in addition to the milk of the nurse cows. He never missed a feed from May 1 until sold in Chicago; and never appeared the least bit nervous or restless.

He weighed December 1 when sold at auction 1,120 pounds and brought the show price (of course a fancy price) of 60c per pound, netting \$672, the second highest price on record.

This development was phenomenal, but one rather expects the phenomenal when a calf is sent to college and given all possible early advantages. The lesson is plain. It "takes two things to make a baby beef," breeding and feeding.

Look around. Maybe on your place there is some promising youngster. Maybe you yourself can show something as good as Kennedy's calf.

3. Feeding the Horse

TIMOTHY—OATS It's little we give the horse—that is little variety. Timothy hay for roughage, oats for concentrates—that's the usual menu in most horse mangers.

Of course the roughage varies with the section—in the south maybe a horse would be given corn blades, on the western coast mostly barley or alfalfa; in some western sections, prairie grass. But on the whole there is a limited variety, and all in all, timothy is the leader.

CLOVER—ALFALFA Timothy has good fuel value, and lots of energy; but clover and alfalfa are also excellent, if not fed too liberally. A good plan is to combine clover hay and timothy, making a substantial, not too bulky roughage. Oats, with these, make a combination of all the needed elements. Oats are bulky as grain; so when oats are fed less hay is needed.

FEEDING POINTERS Most horses get more hay than is good for them. Hay is bulky and distends the digestive organs. Feed enough and just that. More only hinders, and much more is positively dangerous.

Never feed musty hay. The fine mold is sure to get into the lungs and windpipe, and set up disorders. If dusty, sprinkle the hay in the manger, so that the dust will not seriously affect the animal in breathing.

Some feeders don't stop to consider that the horse's stomach is small. If he is fed grain first, then a bulky ration of hay, then watered, clearly all this cannot find place in the stomach at once, and the most important nutritive first part of the meal is pushed out before fully acted upon by the stomach.

Water first, then feed a little hay, and then the concentrated grain part of the ration. Besides, feeding grain first encourages bolting, as the horse is usually hungry. Hay cannot be so easily bolted.

Mixed grains have a better value than the same grains fed separately. This seems to be true with all animals.

The teeth of the horse are very important, as they perform the first process of digestion. If too irregular the food cannot be masticated properly and the animal loses a good part of the starch value. The stomach has no power to act on starch elements, and the intestines are taxed for the whole work of digestion.

BONE AND MUSCLE When you feed a horse, you are feeding for bone and muscle. For this the very best choice is blue grass pasture and oats. But all the legumes, such as alfalfa, clover, cow peas, etc., make highly nutritious roughage, rich in substance for bone and muscle. Among the concentrated feeds, choose from such valuable ones as wheat bran, linseed meals, buckwheat midlings, cow peas, soy beans, Canadian field peas, etc. In the case of a young horse, if you think he is not making proper bone, give him a little good tankage (flesh meal by-product from the slaughter-house)—a few ounces daily; or an ounce of ground bone or ground rock phosphate.

THE COLT The colt should have special feeding attention, for the right start means a future good animal. After the first week (during which feed the dam a little sparingly), both dam and colt can go on pasture. When the dam is fed grain, put her feed box low enough for the colt also. He will nose it, nibble, and soon learn to eat grain himself. Then by the age of five months when the youngster is weaned, there will be no setback. At weaning time, remember the colt has been used to getting food from the dam often; so keep a good supply of mixed feed, corn, oats, bran moistened down with a little water. With this in the feed trough all the time, good water and pasture, the little fellows will get over the hard break in their habits and suffer no dangerous setback.

Never begrudge grain to the colt. Up to 1 year give a grain allowance of 2 to 3 lbs. daily; from 1 to 2 years give 4 to 5 lbs.

THE STALLION The stallion needs good sound oats, varied with corn or barley. Wheat bran should be added to his grain ration; for it is one of the best regulators and also rich in nutritive elements. Feed only what will be eaten with relish, and any left over immediately take out of the feedbox. See that all hay is bright and clean.

Conkey's Stock Tonic is successfully used for stallions, because it acts as a regulator of the body functions, insures full digestion of the food taken into the stomach, stimulates the walls of the blood vessels to proper activity; hence increases circulation, quickly repairs the wasted tissue, and carries away the refuse of dead cells, energy poisons, etc. We do not advise its use all the time. It is not itself a feed, simply a tonic, alterant and general regulator. When, however, it is used in small quantities as the medical element in a general stock salt according to the formula below, it can be safely put before the stallion all the time. He will take it according to his natural horse sense of what is needed for his requirements. You can trust him not to overdose himself, provided you let him have access to it all the time.

FORMULA FOR STOCK SALT Take 90 lbs. barrel salt and 10 lbs. Conkey's Stock Tonic. Mix thoroughly, and put where each animal can help itself. Keep dry. A pound of this mixture will last a horse about two weeks, ordinarily.

THE BROOD MARE The brood mare is best kept on pasture. Of course if pasture is insufficient, grain should be added. Brood mares need bulk and not concentrate, and their feed should give plenty of crude protein and bone making material. Bran is helpful, especially near time of foaling, as it keeps the bowels in open condition.

The brood mare can safely have Conkey's Stock Tonic mixed with her regular feed according to directions, giving her this tonic treatment every few weeks during gestation, to improve the blood and regulate the body functions. Or, a simpler way would be to mix up a regular tonic salt as follows and leave it before her all the time:

90 lbs. common barrel salt,
10 lbs. Conkey's Stock Tonic.

Mix thoroughly, and keep dry, and leave it where the animal can get at it any time. The brood mare will not overdose herself if she is given access to this salt preparation all the time. She will simply take it as she needs it; and no veterinarian could tell better than she herself just what she needs and when she needs it. This cheaply mixed Stock Salt will aid in keeping her whole system in fine condition; that is, well nourished and with no strain on digestion; in fact, it will insure digestion, which means all the rich bounding blood needed to manufacture the young animal's body as well as to maintain the dam in good strength and function.

THE TROTTER The trotter, in winter, should go on half ration—to keep out of danger of fat around the heart and on the intestines. Good clean hay, and a few carrots occasionally make a good roughage. Of course when out in the field during winter, oats twice a day will be necessary for body heat. In spring, when shedding, bran mash is in order. The bran is better than flaxseed meal, which would tend to relax the system suddenly. As he begins his season's training, he should have 8 to 10 quarts a day with less roughage but always as much hay as he will eat up with relish, and none left over. No corn, no carrots. Then, say, once a week to keep the digestive tract open. As fast work commences, make more liberal feeding allowance, 12 to 13 quarts being the usual good average. Oats is the one best feed for the trotter, where expense is not any consideration. The trotter in winter will hardly need the pure Stock Tonic treatment. But we advise that he have regular access to a special veterinary salt made up as follows. This will serve as a mild appetizer and regulator; and when he can get it just when he wants it there is no danger of his taking too much:

90 lbs. common salt,
10 lbs. Conkey's Stock Tonic.

Mix thoroughly, and keep in a dry place, where the animal can get it any time. But when the trotter begins his season's training, be sure to put him on regular treatment with Conkey's Stock Tonic, for about two weeks. Then again, as fast work commences, give him Conkey's Stock Tonic to take care of the extra demand on digestion and the heavier feeding ration.

THE CARRIAGE HORSE The carriage horse should also have oats as the main ration. Nothing like oats to give the carriage horse mettle. A little barley or rolled wheat with bran will give variety; 8 to 10 quarts is the proper average, the best feed being at night. Of course add roughage, usually, long hay, as the carriage horse can take plenty of time for his munching. Don't feed too much hay bulk. When not exercised each day, bran mash morning and night will be best, with the oats for the noon mid-feeding.

The carriage horse should have occasional tonic treatment with Conkey's Stock Tonic. His concentrated diet calls for just such a digestive aid, as well as a tonic and regulator. The carriage horse should always have access to a veterinary salt made up as follows:

10 lbs. Conkey's Stock Tonic,
90 lbs. common barrel salt.

Mix thoroughly, keep in a dry place, where the horse can help himself just when he wants it. He will not overeat it, when it is before him all the time.

THE WORK HORSE The work horse usually has years of usefulness; perhaps on account of his regular working and regular feeding.

10 to 18 lbs. of concentrates make perhaps the best ration. Work horses need more concentrates and less roughage. Some horsemen do not consider it best to feed work horses at mid day. Of course, if so fed, only concentrates should be given. Never feed the work horse heavily on days when it is compelled to stand idle, or paralysis or some similar disorder will follow. Rich concentrated food is the ration for the hard worked horse, because more easily and quickly digested. For light work, lighten the concentrates and increase the roughage.

The work horse, with his concentrated ration, and heavy tax on digestion, should always have before him a special salt made up as follows:

90 lbs. common barrel salt,
10 lbs. Conkey's Stock Tonic.

He will help himself just as he needs it, if it is kept before him all the time (in a dry place). Try this economical easy plan of letting the work animal be his own "hoss doctor." Watch him carefully. He usually gets along better than his less useful horse brethren. But watch for slight disorders, and correct them before they grow serious. In case of digestive trouble or functional disorder due to strain of digestive powers, or to internal parasites, or to poor circulation, immediately put the animal on regular treatment with Stock Tonic, which will bring him around to normal quickly.

SOME PRACTICAL RATIONS Here are some selected rations that have proved successful with horses variously bred and used, and in various sections:

For Colts (trotting bred):

Weaning time—Oats, 2 lbs.; hay, unlimited.
One-year-old—Oats, 4 lbs.; hay, unlimited.
Two-year-old—Oats, 6 lbs.; hay, unlimited.

In Training:

Two-year-old—Oats, 8 lbs.; hay, unlimited.
Three-year-old—Oats, 8 to 12 lbs.; hay, unlimited.

Race Horse:

Oats, 15 lbs.; hay, 6 to 8 lbs.

Hack:

Oats, 8 lbs.; hay, 12 lbs.

Carriage (light work):

Oats, 16 lbs.; hay, 12 lbs.

Draft (heavy work):

Oats, 13 lbs.; horse beans, 6 lbs.; corn, 3 lbs.; chaffed clover hay, 15 lbs.

Farm Horses:

At light work—Oats, 8 to 10 lbs.; hay, 6 to 9 lbs.; straw, 3 lbs.

At medium work—Oats, 10 lbs.; hay, 10 lbs.; straw, 3 lbs.

At heavy work—Oats, 13 lbs.; hay, 12 lbs.; straw, 3 lbs.

Draft Horses (1,600 lbs. wt.) at heavy work:

Summer—Oats, 19 lbs.; hay, 13 lbs.

Winter—Oats, 12½ lbs.; hay, 10 lbs.; corn, 6¾ lbs.; ground grain, 4 lbs.

Farm Horses (various tests):

New Hampshire—Bran, 2 lbs.; corn, 6 lbs.; gluten meal, 6 lbs.; hay, 10 lbs.

Massachusetts—Oats, 3.3 lbs.; crushed corn, 2.7 lbs.; provender, 6 lbs.; wheat bran, 2 lbs.; hay, 18 lbs.

New Jersey—Corn meal, 6.3 lbs.; dried brewers' grains, 6.2 lbs.; hay, 8 lbs.

Utah (1)—Bran and shorts (1:1) 12.6 lbs.; alfalfa hay, 16 lbs.

(2)—Oats, 12 lbs.; timothy hay, 13 lbs.

Michigan:

Morning—Oat straw, 5 lbs.; carrots, 4 lbs.; ear corn, 3 lbs.

Noon—Timothy hay, 4 lbs.; oats, 2 lbs.

Night—Shredded corn stalk, 8 lbs.; carrots, 4 lbs.; mixture of beet pulp, bran and oil cake, 2 lbs.

4. Feeding Sheep

THE BRITISH METHOD

Can we hope to rival British mutton? Feed experts say the difference is mainly due to the difference in treatment of the flocks. The British flock is kept in a condition of content and plenty. Compare them with what you know to be average conditions for sheep in this country! Often the point of view here is to see how little we need feed the flock. We boast of sheep as plant scavengers on the farm and let them go, nibbling, nibbling, close and closer cropping,—grasses, shrubs, roots, cereal grain, leaves, twigs, bark of trees all disappear before them. Weeds and brush are quickly cleaned up from waste land and neglected corners. The sheep will stand it, do pretty well on it, but so long as we count on sheep for this sort of farm help, we must not expect the results which follow the liberal English system.

The English flock owner does not try to see how little he need feed his sheep. He works to see what system of feeding will most benefit his pocket. He doesn't call a feed expensive if he knows it produces. For instance, oil cake and roots are well-nigh universal feed stuffs among British sheep men. From 95 to 100 lbs. of roots are fed per week, per 100 lbs. of live weight.

Here are three specimen cases of British feeding rations, with daily and total gains on average:

No. of Animals	No. of Days	Breed	Average Ration	Average Weight	Av. Daily Gain	Av. Total Gain
20	102	Oxford	Linseed cake 0.3 lb. Barley 0.3 lb. Hay 0.4 lb. Swedes 22.9 lbs.	128	0.43	42
8	121	Cotswold	Cotton-seed cake . . . 1.6 lbs. Hay 1.0 lb. Roots 15. lbs.	132	0.33	41
38	93	Half-bred	Bombay cotton cake . . 0.3 lb. Dried distillers' grains . 0.3 lb. Hay 0.4 lb. Swedes 13. lbs.	119	0.40	36

SHEEP FEEDING POINTS

Grinding grain for a sheep is almost ridiculous. If he is a good sheep he is a good grist mill,—and if neither, he isn't worth feeding. Grain and roughage should not be fed together,—first the grain, then the roughage, then water. The grain trough must be clean of course and big enough to give each animal a show, about 15 inches for each. The feeding racks for roughage should be large enough to hold roughage enough for several days. Don't make the mistake of routing your sheep out for breakfast too early—no need to hurry them; they'll do better if you let their breakfast go until after daybreak.

THE LAMBS It is well to accustom the lambs to a little grain. The same old rule seems to hold with all animals,—grain gives most thrifty gains when fed early. When about two weeks old the lambs will commence nibbling and should then be fitted out with a lamb-creep—a special enclosure running off from the ewe's enclosure. Let the little lambs go back and forth as they please, to and from their mothers. In the lamb-creep have a drinking trough especially for them, and some meal, such as corn meal, ground oats, etc. They will get a little on their muzzles, experiment again, and by and by develop a taste for it. Don't let it lie around to get musty and stale, as it soon will do after it is ground. Just feed enough each time so they will eat it all up with relish and thankfulness.

See that water is in the trough, so they can get it just as they want it. You may surprise yourself seeing how much little lambs will drink if you just let them. Get over the idea that milk is enough "drink" for lambs, or even human babies. These little fellows get thirsty, and there is only one thing that will satisfy thirst—pure water.

Accustom them to pasture gradually,—this is the rule for all animals. After pasture, grain feeding is dropped for the ewes; but another "lamb creep" must run out from the pasture, and there should still be a little grain in the lamb creep to supply the little friskers. Oat, bran or cornmeal are the usual meals used for this purpose. Oats and bran are excellent for development.

By four months the lambs should be thoroughly weaned and separated from the ewes. Then they should be put on new pasture. Always give them the best,—if any clover, let them have that. On clean new pasture they will gain rapidly and not run great risk from stomach worms. Stomach worms are sure to attack them if allowed to run with the old flock, and you will have to fight the worms with Conkey's Stock Tonic or lose your little sheep. Read what is said below about the home-mixed stock salt—for use with sheep. Even little lambs can safely have access to this anti-parasite mixture and it will counteract the great danger from letting them run with the old infested sheep.

Don't forget to keep up the grain ration for the lambs, however, even if on excellent pasture. You want those big economical gains which come from early grain feeding.

NEED OF A REGULATOR We have spoken of roots and their special value as a tonic and regulator.

In Conkey's Stock Tonic we have a compound, chiefly ground roots, of medicinal value. Mixed with the regular feed this can be used, and will give a root-tonic effect right along with the feeding. In fact Stock Tonic is particularly adapted to sheep, as, in addition to other qualities it has in it certain ingredients which act as worm destroyers.

Sheep need regular treatment with such a vermifuge; for worms are the great sheep parasite. Less than $\frac{1}{4}$ tablespoonful is needed for each sheep.

THE EWE The breeding ewe in winter should have a carefully selected ration, one that will keep her gaining about a quarter pound a day. Too much grain is fattening, but a half pound of some good concentrate, fed with 2 lbs. of mixed hay and from 2 to 3 lbs. of corn silage, corn forage or roots, will do nicely and cost about 2 cents per day on the average. Keep digestion perfect by occasional tonic treatment with Conkey's Stock Tonic. Conkey's Stock Tonic added to the regular feed always makes it more palatable.

"FLUSHING" English shepherds make a practice of "flushing" ewes before breeding. This means, feeding the ewes with extra rations, high in nutrition, and extra pleasing to the appetite. This is kept up for two or three weeks before breeding; and it is claimed that ewes bred in this condition are more likely to produce twins at lambing. With mutton breeds these extra lambs are always profitable, with little expense in fitting them for early market.

THE RAM The ram should have good, nourishing feed, with plenty of protein, and not too much carbohydrates. Don't let him get fat. Give him muscle-making feed, and keep him up in constitutional vigor. Investigate Conkey's Stock Tonic for just this purpose. Give him an occasional bracer of Conkey's Stock Tonic mixed with his regular feed and it will keep him in active condition.

PRACTICAL RATIONS A generally accepted feeding standard for fattening sheep, per 100 lbs. live weight, is 3 lbs. of dry matter with a nutritive ratio of 1 to 5. On this basis below are given some specimen rations, which come up fairly well to this good standard.

Feed	Dry Matter Lbs.	Protein Lbs.	Carbohy- drates Lbs.	Fat Lbs.	Nutritive Ratio
Alfalfa hay—2 lbs.	1.83	00.22	0.79	00.02	
Corn—1 lb.	0.89	00.08	0.67	00.04	
	<u>2.72</u>	<u>00.30</u>	<u>1.46</u>	<u>00.06</u>	<u>1:4.3</u>
Prairie hay—2 lbs.	1.89	00.07	0.87	00.02	
Kafir corn—1 lb.	0.85	00.08	0.57	00.03	
Cottonseed meal—1.5 lb. . . .	0.23	00.09	0.04	00.03	
	<u>2.97</u>	<u>00.24</u>	<u>1.48</u>	<u>00.08</u>	<u>1:7</u>
Corn silage—2 lbs.	0.21	00.01	0.11	00.01	
Alfalfa hay—2 lbs.	1.83	00.22	0.79	00.02	
Kafir corn—1 lb.	0.85	00.08	0.57	00.03	
	<u>2.89</u>	<u>00.31</u>	<u>1.47</u>	<u>00.06</u>	<u>1:5.2</u>

Whatever the ration, remember that a good medicated stock salt will help to get the most out of it, increasing palatability and fuller digestion. There is no need to pay extravagant prices for such a preventive and

conditioner. With little trouble and a cost of less than 2½¢ a pound you can make your own mixture:

90 lbs. barrel salt.

10 lbs. Conkey's Stock Vigor.

Mix thoroughly and keep in a dry place, but where the sheep can help themselves anytime. You can estimate 1 pound of this mixture for every sheep for a period of 10 to 12 weeks. It will correct ordinary digestive troubles, and act as a worm destroyer and preventive of many internal parasites. It will actually ward off disease. **Sheep need salt.** Try this easy and inexpensive Conkey way of salting them, and see how it cuts down losses and improves your flock.

5. Feeding Swine

EARLY GAINS Swine are no exception to the rule already stated, that grain fed early brings the biggest proportion of profit.

At the Wisconsin station experiments with 18 pigs of good feeding powers, on a ration of wheat middlings 1 part, ground corn 2 parts (salt and woodash in addition, of course), during a test of 12 weeks, the biggest and cheapest gains were made early. Gains made in the last four weeks of this test cost fully one-third more than gains of the first four weeks of the period.

WHAT MAKES FIRM BACON? Wheat is in the first rank for feeding pigs. It tends to be expensive, except in wheat growing sections, although it is proved that frosted wheat is just as effective as the first quality. Barley also ranks high for feeding for bacon, with oats and peas next in order. Under ideal conditions barley, peas and oats, with pasteurized dairy products, some corn, especially at the finishing period, make up the best feeding standard.

Firm bacon is the product of such feeds as barley, blood meal, bran, clover hay, wheat, oats, oatmeal, rye, shorts, turnips, distillers' grain, tankage, skim-milk, whole milk and whey. Skim-milk and whey, fed always with grains such as corn, make a solid firm product. Exercise also helps to make this firmness.

CORN THE FINISHER Pigs fairly well fed and given good care up to 100 lbs. can then be quickly finished off into fine bacon with a mixture of various meals. Corn is above all the "finisher." Corn as a feed is good at any time, and always relished by the porkers; but whenever it makes up more than one-half the feed stuff it tends to less firmness of flesh and too much fat shoulder. Soft pork in general is produced by such feeds as buckwheat, table refuse, corn and gluten feeds, while skim-milk added to these corrects this tendency. But corn is especially good in cold seasons.

THE GROWING STOCK For instance, in summer a good combination for growing stock would be clover, bran, shorts, possibly some oil-meal, supplemented later by succulent pumpkin and squash for the brood sow after her pigs are weaned. Then as the cooler season approaches corn can be added and used more and more liberally, finishing, rounding, supplying necessary body-heat, so that the pigs can make the best growth out of the good conditions provided. Young

growing stock need nitrogenous and mineral matter; and that is why corn should **never be too liberal a part of the early feeding.** Nitrogenous matter for body tissue, and lime for bone development, can be found in such feeds as alfalfa, clover, vetch, soy bean, cow peas, peanuts, etc.,—in short, the legume crops, which have such wonderful value. Of all forage crops alfalfa is one of the most important. It is estimated that 5 lbs of alfalfa will about equal 3 lbs. of mixed grain.

THE HOG A GRAZER Grazing is the cheapest feeding system. For modern profitable hog raising, a combination of grazing and feeding makes always the most economical system, carrying the growing pigs nicely over the summer, ready to fatten. Along with alfalfa, for a cheap pasture, rape is coming more and more into recognition. It is best sown in drills 30 inches apart, and allowed to get a foot high. Some grain should be fed in connection with it.

CORN PLUS Prof. Henry, of Wisconsin, preaches a larger use of legume crops, rape and roots, which make a cheap growing ration. A little corn could be added; but liberal corn should come at finishing only. Prof. Henry makes a strong plea for more pigs on this basis: alfalfa, clover, Canada peas, cow peas, soy beans, peanuts, rape, roots, etc., can be raised so much cheaper than corn; and besides this, roots and legume crops greatly enrich the soil, thus lessening the first cost to the farmer. Such crops are better suited to growing stock, for they insure fuller development of bone and body,—in short a frame ready at full term for the “finishing touches” of King Corn. Why should we limit our pork output by the amount of corn available for feeding, when instead, we could estimate on corn plus all such crops as alfalfa, clover, cow peas, soy beans, rape, roots, etc.? The market is waiting for more pork products.

SLOP FEED Swine like their meals sloppy. Slop is usually the principal feed; and most raisers advise plenty of liquid in the trough, whatever the ration. However, the experiment station tests have not yet shown any advantage in slop feeding over dry grain. Of course the swine should have plenty of water, even with slop feeding. Make sure the water is pure, and in winter warm it slightly.

Table slop that is fresh is an excellent and an economical feed for hogs; but care must be taken to keep it free from soapy dishwater and other dangerous refuse. Lye and soap powders strong in sal soda cause many mysterious epidemics,—in some cases mistaken for cholera. There is always this danger in feeding hotel slop, which in addition to alkali may contain such dangerous substances as broken glass, crockery, strings, paper, etc. Another caution is to be sure to feed it fresh, as sour, fermented swill is a standing invitation to intestinal disease.

TUBERCULAR DANGER Similarly, care must be taken with creamery by-products. If positively pasteurized there is no danger; but if not, your swine are very liable to tubercular infection. Also, if hogs follow tubercular cattle they are pretty sure to become infected. It pays to let hogs follow the cattle,—in fact it is a low estimate to say 100 lbs. of shelled corn fed to steers will produce 4 lbs. of pork on hogs following them; but make sure that the cattle are tested, and free from tuberculosis.

MINERALS NEEDED Whatever the ration, we must keep in mind the fact that the hog is a rooter, and that a prime necessity to his body is the mineral substance he gets in rooting. When rooting is interfered with, his daily ration must include the mineral correctives so essential to his big body. Don't let the hogs on your place tear down the crumbling masonry for the sake of the brick and mortar. Give them ashes, charcoal, air-slacked lime, bone-meal and ground rock phosphorous. Pigs also need some salt,—not much but at least one ounce a day. Salt should never be put in their feed; but a salt mixture should be before them all the time, so that they can help themselves. Salt is not only an appetizer, but it wards off digestive troubles that might easily result in serious disorders. Try a mixture of Conkey's Veterinary Salt, made up according to directions, using common salt from your own salt barrel and mixing with every nine pounds a pound of Conkey's Stock Tonic. This will give you a general conditioner, safe to use all the year round, without danger of injuring the hogs but practically insuring against worms, and many forms of intestinal disease. The cost would be less than $2\frac{1}{2}$ c a pound, and the medical, appetizing, tonic effects of the mixture would be greater than any commercial medicated salt now on the market. Less than $2\frac{1}{2}$ c a pound! You can judge for yourself the saving.

FOR THE BROOD SOW Give her a plentiful ration, as there are heavy demands on her. She should have cooling and laxative foods, hence not much corn. For a few days before farrowing, do not feed anything, but give the sow plenty of agreeable warm water. After this, feed mainly thin slop of oats, shorts and bran, but no corn. Clover and alfalfa cut or ground and mixed with the slop will be relished. After the third day the critical period is over, and the sow can be brought gradually back to a full substantial ration—all she will be able to digest. Do not give her any sour milk or sour slop. A good milk making ration is wheat bran, shorts and skim-milk,—good for the old sow and good for the pigs to experiment with in preparation for weaning.

Don't forget occasional tonic treatment with Conkey's Stock Tonic to keep digestion perfect and all functions normal.

FOR THE BOAR For a good young 50 lb. herd boar to make the largest possible growth, and not injure breeding qualities, one authority recommends the following ration: corn and bran, mixed half and half by weight; or, one-third corn, one-third bran and one-third oats. If it is necessary to raise the corn to two-thirds, use one-third bran and add a little oil meal. Corn tends to fatten and must not be overfed the herd boar, or it will fill up the organs. The herd boar is always benefited by Conkey's Stock Tonic treatment. The herd boar in particular needs to get every ounce of benefit from the digestible nutrients in his ration. The root ingredients in Stock Tonic tone and invigorate the system, and fit it for all drains upon it. It acts directly on the walls of the blood vessels, increasing their contractile power, which means better circulation. Of all animals the herd boar needs good, pure blood, and that perfect condition which is the foundation of breeding profits. Conkey's Stock Tonic is the short, scientific cut to vigorous breeding condition.

SPECIMEN RATIONS FOR FATTENING For fattening and finishing for market here are two good specimen rations well liked in the corn belt:

Rations for 200-lb. Fattening Hog

FEED	Dry Matter Lbs.	Protein Lbs.	Carbohy- drates Lbs.	Fat Lbs.	Nutritive Ratio
Feeding Standard	6.4	.8	4.8	.1	1:6.3
RATION No. 1					
Corn—7 lbs.	6.24	.55	4.67	.30	
Tankage—1 lb.	.93	.32	.15	.14	
	7.17	.87	4.82	.44	1:6.7
RATION No. 2					
Kafir corn—8 lbs.	6.78	.62	4.57	.22	
Cottonseed meal—½ lb.	.46	.19	.08	.06	
	7.24	.81	4.65	.28	1:6.5
If necessary to feed all corn, estimate 8 lbs. to 200 lbs. fattening hog, making the following analysis:					
RATION No. 3					
Corn—8 lbs.	7.13	.63	5.33	.34	1:8.6

Home Made Self-feeder

HORSES

I. Raising Good Animals

A GOOD horse: That means good breeding, good feeding, good care, good training.

High price never stands in the way of a purchaser, if the animal is worth it.

A good horse is good anywhere and good all over. But no one seems to want these nondescript animals so many farm owners are thoughtlessly raising.

Old Dobbin

OLD DOBBIN The old type of farm horse was sluggish and slow, fit for tough sod, stones and the stumps of pioneer clearings. Today, on our better farms, there is no place for Old Faithful and his quality of flesh and spirit.

TAKE IT FROM WILSON

Today as Secretary Wilson points out, the most economical way of raising good horses is right on the farm in connection with ordinary farm work. The farmer who raises horses, i. e., good horses, gets two profits (1) a profit in labor and (2) a profit in breeding. For look: Three brood mares will do the work of two geldings. In addition, the colts will easily pay for their own and their mothers' feed. Colts

of stocky draft breed can pay part keep while they are learning to work on the farm, thus earning their way "through school" the same as an ambitious boy at college. Many farmers now urge getting rid of the geldings, and putting good brood mares in their stead. The horse on the farm is put to real work only about a third of the time, and on this basis, the high cost and keep of the gelding hardly pays the farmer. Let the cities have him!

HONK, HONK! In spite of the automobile the horse is still king—statistics show it. He is the motive power for you, with no losing of bolts or puncturing of tires; though his shoes need looking over once a month, his mouth needs shaping up once a year, and he requires a tonic occasionally. But he'll take you over the hill or through the country road mud-hole and do it without any chug-chug or wheezing. It costs something to feed him; but he never runs out of gasoline. When sometimes he is laid up for repairs, a few weeks on grass will do it, or the right sort of medical treatment, instead of its taking a three-figure bill to rebuild him.

PLENTY NEEDED And plenty more are needed! We need more of this thrifty horse-raising farm-economy. There is now only one horse or mule of working age to every 30 acres under cultivation. 'Taint you and 'taint me, but looks like some of the neighbors are neglecting their opportunities; else they're running their farms with gasoline engines. The new record price on the Chicago market for a draft gelding is \$680. Motor trucks have not injured the call for good style, good action heavy drafters. The fad for motor trucks has lost its advertising value, so say the big concerns. They are too expensive to keep up, and many of the large mercantile houses East and West are getting rid of motors and buying up fine specimens of heavy drafters.

RAISING COLTS There is a right way to raise colts: from sound mares and extra good, sound, muscular sires. A stallion cannot be expected to transmit qualities which he does not have. The best way of all to raise colts is to select just one type and stick always to that in breeding. Choose for yourself, whether it is Percheron,

Clydesdale, Suffolk or Shire; or instead of a draft breed select a coach type—French, German, Cleveland Bay or Hackney; or try the old New Hampshire favorite, the Morgan. There is some profit in colts bred that way when it comes to finding a market. Buyers can rely on your standard. If the whole section joins with you for one select type so much the better, since buyers can give better prices when they can come and pick

out a whole carload. There certainly is a large and sure profit in every colt of good draft type, easily paying back the extra cost of the well-bred mare and the very best stallion service. Mares bred in November will foal the following October, after most of the farm work is over and the flies are gone. But don't forget the first caution: that with the colt his first year's care is practically the making of him.

THE FIRST YEAR To get the most out of a colt take care of him right. Give him a good start, for as with most animals it is the first year that fixes the standard. Don't wean too suddenly, as this causes a setback hard to make up later. Give the weanling some grain in his ration—keep him growing. Keep him thriving, and remember a bushel of grain charged up to his cost now will be worth many bushels a few years later. Give him all he will eat up clean in the manger and none over. Give plenty of exercise to harden his muscles and develop appetite.

Safe to say a colt properly cared for the first winter, then given all the pasture he wants the next summer, will come through all right with any sort of decent treatment the second winter and be reasonably sure of good development. Keep a lookout for thrush, which means keeping the stable floor clean and using Nox-i-side Dip and Disinfectant in the water when washing out the hoofs. Also look for lice and worms. Thrush, lice and worms are the three pests that afflict the colts and fillies.

WATCH THE COLT'S FEET Watch the feet all the time, for the feet of colts frequently need leveling. Unless the colt is kept on grass or well exercised the feet are pretty sure to develop unevenly, and faulty, uneven growth will affect the whole foot development and make the joints and tendons liable to inflammation. Unevenness will affect the upper formation also, and in time destroy the whole balance and action. Sometimes one wall of the hoof is thin, so that it wears down sooner. If an inner wall, then naturally that side runs down and a case of knock-knee or wide-toe develops. Or if the outer wall is thinner, the outside wears first and the result is pigeon toe. Careful and even

Good fore feet

Crooked fore feet

trimming is the only remedy. Thus it is occasionally necessary to use the rasp for symmetrical development. But always go a little cautiously with the rasp, there is so much danger of abusing it. Get the colt out on a level floor every month at least and see if his feet need leveling. Look at each foot and see if it rests square and true, pointing straight to the front

and with the proper slope of toe-line. It is the square gait that conserves strength in the horse and increases endurance. See to it that your colt grows up square gaited.

TRAINING COLTS About training: Teach the colt to be subordinate at the start. Handle him, let him get accustomed to it. Teach him to come when called. Petting and a lump of sugar will do it. Don't let him be afraid of you or take fright at anything. If he is to amount to anything you must keep him courageous and fearless. Don't let anyone tease him or startle him and take all the fresh spirit out of him. If there happens to be any practical "fooler" in the neighborhood who likes to scare and "fool" with a colt, get rid of the fooler in any prompt sure way you can think of, whether he is your best hired hand or nearest relation.

When you catch a colt, don't catch by the neck only,—like as not you will swing him and throw him. Catch with one hand under the neck, the other under the hams or around the buttocks, so that you can steady his movements. This is a good way to teach the commands of Whoa and Get Up as you can control him with your hands and move him forward with every command of Get Up and stop him when you saw Whoa. Also teach him to back and to Stand Over. Teach the use of the halter early, first to lead and then to drive. Get the colt familiar with the bit so he will respond to commands, before ever you attempt to harness him. In teaching the colt teach only useful lessons and not the so-called "cute tricks" of biting, rearing and kicking, which will have to be untaught later. Teach only one thing at a time, but teach that one thing thoroughly. Be patient with the little fellow but get his entire attention for a short period at a time, and while you are teaching give him your entire attention.

Don't forget to teach your colt to fast walk if you want a good price for him later. A fast walking horse can get through with about a third more labor than a slow one, and he is valued accordingly.

FIRST TIME IN HARNESS When ready for harness don't use a new set. Select one that smells of horse, and let the colt nose it first, then gently slip it on him. Did you ever see a thoughtless man sling a rattling, strap-flopping harness over the back of a colt and then grin like an idiot because the colt took fright? Maybe he didn't realize he was ruining the colt and making him that much harder to manage.

Don't use new harness, but don't go to the other extreme and use some old, worn-to-the-point-of-breaking stuff that may cause an accident and spoil your colt, for all time most likely.

There is one main requisite to success in training—it is kindness.

That is why good horsemen don't speak of "breaking" a horse any more. You might have to break (or bust) a bucking broncho but let your farm colts be trained, not "broken."

STOP AND THINK Our animals are real agents in the processes of civilization. Whether we keep a few for pets or for their labor, or for their valuable products, all our dumb animals compel us to habits of kindly care, if we want to get the most out of them. Isn't this thought, a pleasant one to consider,—that animals cultivate our gentleness and responsibility as against any lurking brutality in us?

STICK TO A TYPE You wouldn't have scrub or mongrel cows, or swine, or even chickens, on your farm. It doesn't pay.

It is the same with horses, or more so. They have been bred for special work, light or draft types. You know what work you want; then select the type for it, and breed for it every time. What is

Bred for hard work

the little extra trouble along-side of the improvement of the horse stock on your place? Any extra expense is quickly repaid by the surely good colts—and what better advertising is there for the thrifty farmer than his good animals?

BEST WAY TO SELL As stated above, let the whole neighborhood, better still the whole county, select a type for breeding. There are immense advantages. It advertises the section; and buyers are willing to give more per head when they can pick up a whole carload,—say from \$5.00 to \$10.00 more per animal. But be sure that you know your own horses: Don't let the buyer take all your best. Keep fully up to market requirements and the value depending on soundness, conformation, quality, condition, age, color, education and general appearance. Keep in mind this fact, that every animal will be graded in the judgment of the buyer—as choice, good, medium, common or inferior, and it's an individual test.

GOVERNMENT AID The government is now taking a hand in this business of breeding, and giving special attention to light and draft horses of better type. In Vermont the federal government is co-operating to a considerable extent to bring back the old Morgan. This old favorite has always been loved for his trim, short legs, big body, trappy action and lofty style. A few enthusiasts desire to grow this "big little horse" to 15.1 hands, but the majority favor keeping him down to 14.2 or 14.3 hands. In Iowa the government work is for improving draft horses, and in Colorado, heavy carriage horses, by selection from American trotting horses. All this is federal work. Individual states are waking up on

their own hook. New Jersey has appropriated \$20,000 to provide stallions of good draft and coach type for the use of farmers in grading up their own stock. With co-operation the horseflesh of this country is bound to improve. Stricter laws are in force, beginning January 1, 1911, to insure only pure bred importations, so that it is clear, the United States Department of Animal Husbandry is lending its aid in every possible way to benefit American breeders. The government is confident that careful breeding of live stock pays.

SOME HORSE HISTORY Since prehistoric times, when man first got the mastery of the now extinct wild original, the horse has been developed for various purposes according to man's various needs. From that early specimen which three million odd years ago lived and thrived in many parts of the world, in size not much larger than a dog, with two toes on his front feet and triple cleft on his hind feet—it's a long and interesting story to the horse of today. But for practical purposes it is hardly worth while for us to look back much farther than the 17th century, A. D., when Arabian blood horses were introduced into Europe and marked the first real step toward special improvement. It was by means of this Arabian stock that breeders in England worked out their improvements and reached at last the highest types of animals we know today as English Thoroughbreds, Racers, Hunters and Hackneys. It was from these in turn this country developed the American Horse, which we have perfected chiefly in trotting.

BIG DATES IN HORSE HISTORY The keeping of studbooks dates from 1808 when the English Thoroughbred was established. But previous to that time, in 1797, Diomed, winner of the first English Derby, was imported to this country. Bull Rock, which Virginia imported in 1730, is believed to be the first Thoroughbred brought to this country. But Diomed, then 20 years old, may be said to be our greatest early importation. In 1836 Glencoe was successfully imported and the later Leamington was the next most important arrival, since which there have been many and various importations from every country.

MADE IN AMERICA As already stated, America has improved the Thoroughbreds. These horses average now over 15 hands, 2 inches high and weigh probably 150 lbs. more than fifty years ago, and show improved individual qualities. This improvement is thought to be due to better natural conditions, since animals are housed less over here, have better pasture, and other conditions better for their feet, on which so much depends in horse development. In general the changes in America have been along practical lines, to meet working needs, rather than the demand of sport or pleasure. The use of light vehicles here, and the improvement of our roads have helped to develop high trotting ability.

II. Draft Horses

With most horse-raising communities the type of horse selected will be one of the many draft breeds.

Horse types may be considered under two main classifications,—Draft and Light Horses.

Draft horses are the heaviest and largest of horse breeds, and have been developed to meet the demand of cities for trucking purposes. The chief draft breeds are—Percheron, Belgian, Clydesdale, Suffolk and Shire.

In form draft horses are massive but low built, blocky, compact, animals. They suggest power in every feature of their development. In

general we estimate their value according to weight, on the supposition that this indicates the power brought into the collar. Draft horses conform to certain main essentials of development and usefulness, as follows:

DRAFT POINTS Lean head, strong and muscular neck, smooth, well-set shoulders, broad knee, smooth, well-sloped pastern, foot large, well-set and free in movement are the chief conformation points to look for in draft horses.

Quality is shown by large, strong, firm bones, with tendons prominent. Hair fine and silky,—especially the "feather," the hair on the fetlock,—is taken to show good bone quality, just as hair indicates quality in cattle.

Bold, free, regular gait at a walk is essential,—for express animals the same ease of gait in a trot. For a farm horse, a good square walk is like a good, square deal for men. A good fast walk is especially valued for the reason already stated.

A \$3,500 Brood Mare (Percheron), owned by Gregory Farm, Whitehall, Ill.

GENERAL POINTS The score card from the University of Missouri calls for generous and symmetrical development, lively carriage, full bright clear eye, large flexible nostrils. In every point quality is best described as neither coarse nor refined, not too large or too small in bone, too massive or too slender a leg. In the entire scale of points full 15 go to action,—that rapid, springy, straight walk, or free balanced straight trot so essential for commercial purposes. Another 10 points go for weight alone, of course age and condition are also considered. The forefeet should be large, even and sound, hoofs dense and waxy, sole concave, bars strong, frog large and elastic; heels should be wide, and the rule is one-half the length of the toe and set vertical to the ground. Full 8 points go to the forefeet, and 6 points for the hind feet on the same general characteristics. Hocks should be large, strong, wide, deep, clean and well set.

WEIGHT AND HEIGHT Draft horses of above good type weigh from 1,500 to 2,000 lbs. The rule for estimating value is 25c for each additional pound—the heavy horse in harness means more horse power in the collar. Hence weight is more important than height. The average height is 16 to 17½ hands.

PERCHERON The one most popular draft horse in America is the Percheron.

These big, gray fellows (black, bays and roan are getting to be common) have rather small heads with nicely arched necks, broad muscular hindquarters, short legs showing little "feather." While obscure in origin, they have been bred for many centuries in La Perche, France, blended and improved with the Arab and Barb blood introduced into France from the Saracen invasion (732 A. D.). The French government early realized the advantage of the careful breeding of Percheron horses, and government studs were established back in the 18th century. The Percheron type was early introduced into America: but the real history of the breed over here dates from the importing of the gray colt Louis Napoleon into Ohio.

LOUIS NAPOLEON Louis Napoleon proved a marvelous breeder and it is claimed to his credit that over 400 of his sons proved successful stallions. The average of power in the Percheron "grades" today is said to be fully one-fourth greater on account of the influence of this wonderful sire. Since Louis Napoleon there have been many importations and the Percheron is well established in this country. They are the most popular of all the drafters, no doubt of that. The register contains some 30,000 names, the actual number of pure bred mares being very small however. Percherons have been used with common brood mares to improve stock, so that cross breeds and grades are now exceedingly common. Louis Napoleon was 15½ hands high, weight 1,600 lbs. The Percheron standard here is 16 to 17.2 hands, however, weight 1,600 lbs. to 2,200 lbs. Percherons mature very quickly, in fact, it is possible to breed the mares at 2 years of age but farm mares should not be bred under 3 years. Docile, but with plenty of brain back of the full and prominent eyes; true and snappy action, reliable in heavy work, the Percheron deserves all its honors. Competition is keen among supporters of the breed so that showing contests are always sure to bring out worthy contestants.

FRENCH DRAFT Formerly the Percheron was mixed with the French Draft class, but now the French Draft is kept as a distinct breed. They originated in Northern France, and thus for years they were called Normans. If classified according to their place of development we might follow Prof. Plumb's* distinction of the French Draft breeds as 1, Percheron (from La Perche, France), 2, Boulonnais (from Boulogne), 3, Breton (from Brittany), 4, Nivernais (from Central France), 5, Ardenais (from Ardennes, on the Belgian frontier), 6, Picardy, sometimes considered Belgian, sometimes Boulonnais.

French draft horses are exceedingly heavy, 2,200 lbs. or more, height 16 hands and higher. They are not so true to type breeding, because of the mixed ancestry, but with greater care this fault will in time be corrected.

BELGIAN By no means as popular as the Percheron and many other draft types, the Belgian is every year making great strides, chiefly on account of the greater attention given importing and breeding.

*"Types and Breeds of Farm Animals," by C. S. Plumb

Belgians are the giants among horses, heavier than the Percheron—in fact they are heaviest of all breeds—weighing from 1,700 to 2,500 lbs. The Belgian government encourages the careful breeding of this type of draft animal, supporting the official society for the promotion of Belgian Draft breeding, and spending some \$70,000 annually for shows, prizes, etc. Besides, the government gives “maintenance prizes” to certain animals, and in the case of extra fine specimens gives a yearly bounty as long as the animal remains approved and in the country. If he is exported this bounty must be paid back to the government, however. A pension system like this is pretty sure to put enthusiasm into careful breeding, and send the breed forward by leaps and bounds to improved development. The breed was first imported into the United States in 1866 and was called “Boulonnais.” Exhibits were small and unimportant until the international show in Chicago, 1905. In 1910 the breed made an unusually creditable showing, not only in number but in improved quality and characteristics. Safe to say it will now go steadily on in this direction. The new 1911 laws on importing duly registered pure bred animals will greatly safeguard the Belgian as well as all other breeding interests in this country.

CLYDESDALE The Clydesdale type has a long body with a long stride and rapid walk—they are “good goers.” In fact they are famed for their good feet, good bone and good action, all points duly praised by Scotchmen who want drafters that will move away strong, drive straight and balance evenly. The Clydesdale is distinctly a Scotch draft breed, coming to us by way of the Scotch colonists in Canada. In 1842 the first importation was made. The hairy legs are much liked by good Scotchmen although criticised by many American farmers who have to work their horses in mud or dampness. Clydesdales are from 1,600 to 2,200 lbs. weight and 16 to 17 hands high. The color is usually brown, bay or black with white markings on face and legs.

Champion Shire Stallion—Chicago, 1910
(Dan Patch, sold by Truman's Stud Farm to Mr. John J. Mitchell for \$10,000)

ENGLISH SHIRE The English Shire comes to us from Britain, probably dating back to the heavy cavalry animals brought by the Roman conquerors. He is the "great horse" or "war horse" of early writings and was certainly well fitted for bearing the weight of the heavy armor of early times. Shires are heavier, also taller than the Clydesdale, and slower gaited. In color they may be bay, brown, black or gray. Robert Bakewell, the great English breeder, did a great deal for the Shire during his useful life in the latter part of the 18th century. The modern Shire has been much improved to get rid of the coarseness and sluggishness of the old fashioned animal. They are very satisfactory workers and are now found on farms throughout the country. In Shires look for the characteristic "Roman" nose, and the heavy "feather" on the leg.

SUFFOLK PUNCH The Suffolk is an English breed. They are a mixture of several strains but have generally recognizable characteristics: small ears, eyes also rather small but forehead broad, and nose tending to the Roman. The neck is well arched, especially in the stallions. Particularly noticeable is the round-barrelled, full body. This used to be much exaggerated in the type, so that they formerly deserved the term "Punch." However, the aim now is for a body girth of about 8 ft. measured back of the shoulder. Suffolks are not large boned, but they are claimed by breeders to be of good texture. Their feet have been criticised occasionally, though they rank well in action, coming next to the Clydesdale. English farmers claim for the Suffolk a maximum of working power on a minimum of feed and rest. They certainly have vigor and constitution. They are long lived and remarkably productive in breeding. One record is that of the stallion Julian Boxer 755, who has been used now for 25 seasons.

III. Light Horses

The draft type, as we have seen, is all power and utility.

We now come to light horse types, and find various classifications of light horses according to their fitness for practical work or pleasure. Carriage, trotting, running and saddle horses are all of them light horse types, and in general they lean to lithe, symmetrical, muscular and not over-full development.

LIGHT HORSE TYPES

Carriage:

- French Coach.
- German Coach.
- Cleveland Bay.
- Hackney.

Trotting:

- American trotter,—various blood lines.
- American roadster,—grades.

Pacing:

- Various breeds.

Running and Saddle:

- Arabian and Barb (ary).
- English Thoroughbred.
- American Saddle Horse.

LIGHT HORSE POINTS

All of these types suggest nervous energy and power. All have longer legs than the draft type of animal, with back short and strong. In quality the light horse must suggest refinement as well as strength and endurance. In fact in all light horse types there must be plenty of style and grace to suit the popular requirements. Quality is shown by the thin skin and prominent veins, also by the fineness and length of the mane and tail. Bone substance is in the animal, but here too we look for the same quality of refinement. The animal must have clean, sharply defined tendons. In constitution we look for generous and symmetrical development, but every point must be suggestive of spirit. The flanks must be full; the eyes bright and clear and the nostrils large and sensitive.

As in the case of draft breeds the score card for light horses calls for plenty of action,—15 points for long, fast, elastic, straight and regular walk, or a trot that is rapid, regular and straight. Seven points go for large, strong, wide, deep, clean, well-set hocks; six points for forefeet of medium size, even and sound, with hoofs dense and waxy, and the same general characteristics for good horse feet as for draft animals. Temperament is also very important for the light breeds; and five points cheerfully go for spirit and energy, combined with teachableness. Temperament is extremely important since so much of the horse's value depends on training.

Variation from Draft to Coach and Light Horse Types

CARRIAGE TYPES

Of the various types of the light horse breeds the largest is the coach or carriage animal. The carriage horse stands usually 16 hands high, and is suited to heavy harness, with a full, graceful body, high carriage of tail and "coachy" or "trappy" action. The French and German Coach were developed in each case by the national government, out of native mares, by English Thoroughbred stallions, the object being more fitness for cavalry purposes. The French Coach has a considerable mixture of blood, and is not therefore true to color in breeding. The German Coach horse is usually bay or brown. In general the German Coach horse has not quite as good action as the French Coach horse; the latter more resembles the Hackney. Hackneys are the corresponding type in England, being the mixture of Thoroughbred blood with that of native driving mares, improved with the Darley Arabian who was imported in 1706. With the Hackney speed is not a consideration, but it has a good walking gait and high knee action. In action, the legs are much flexed and the foot describes a circle. Hackneys are good "park" or other stylish driving animals. They are not so good for the farmer, being a little under size and not especially strong, either in speed or endurance.

AMERICAN TROTTERS The American Trotter or Roadster—purely an American breed—requires as its chief points stamina and speed. It is next in size to the carriage horse, standing $15\frac{1}{4}$ or under 16 hands high. It should not weigh over 1,100 lbs. and should show lean, angular development. Roadsters should have less “show,” but straight true action. A long stride, the secret of our great running records, should always be a marked characteristic.

Prior to 1806 no trotting horse had taken a record of a mile in less than three minutes; but in that year a horse called Yankee made a record of 2:59, at Harlem, N. Y. Nearly a century passed before the time was cut to less than two minutes by Lou Dillon. The following trotting record will revive some interesting if not thrilling recollections: Lady Suffolk 2:29½ in 1845, Flora Temple 2:19¼ in 1859, Dexter 2:17¼ in 1867, Goldsmith Maid 2:14 in 1874, Rarus 2:13¼ in 1878, St. Julian 2:12¼ in 1879, Jay Eye See 2:10 in 1884, Maud S. 2:08¼ in 1885, Sunol 2:10½ in 1889, Nancy Hanks 2:04 in 1892, Aliz 2:03¾ in 1894, The Abbott 2:03¼ in 1900, Cresceus 2:02¼ in 1902, Major Delmar 1:59¾ in 1903 and Lou Dillon 1:58½ in 1903.

World's Records—Trotting

EVENT	NAME OF HORSE	Date	Record
½ mile to wagon	Uhlan, blk. g., by Bingen	1911	0.56%
1 mile	Lou Dillon, ch. m., by Sidney Dillon	1903	1.58%
Fastest mile in open	Uhlan, blk. g., by Bingen	1910	1.58%
“ 2 miles	The Harvester, br. h., (5) by Walnut Hall, (1st mile 2.08½, 2nd mile 2.06¾)	1910	4.15%
Fastest mare	Lou Dillon, ch. m., by Sidney Dillon	1903	1.58%
“ gelding	Uhlan, blk. g., (6) by Bingen	1910	1.58%
“ stallion	The Harvester, br. h., (5) by Walnut Hall	1910	2.01
“ yearling filly	Miss Stokes, b., by Peter the Great	1909	2.19%
“ yearling colt	Wilbur Lou, b., by Kinney Lou	1910	2.19%
“ 2 year old filly	Native Belle, b., by Moko	1909	2.07%
“ 2 “ colt	Justice Brooke, b., by Barongale	1910	2.09%
“ 2 “ old gelding	Endow, b., by Cecilian	1899	2.14%
“ 3 “ colt	Colorado E., b., by the Bondsman	1910	2.04%
“ 3 “ filly	Native Belle, b., by Moko	1910	2.06%
“ 3 “ gelding	Peter Thompson, b., by Peter the Great	1911	2.07%
“ 4 “ filly	Joan, b., by Directum Spier	1910	2.04%
“ 4 “ colt	Directum, blk., by Director	1893	2.05%
“ 4 “ gelding	Uhlan, bl., by Bingen	1908	2.07%
“ 5 “ mare	Lou Dillon, ch., by Sidney Dillon	1903	1.58%
“ 5 “ stallion	The Harvester, br., by Walnut Hall	1910	2.01
“ 5 “ gelding	Uhlan, bl., by Bingen	1909	2.02%
“ 14 “ old	Country Jay, ch. g., by Jayhawker	1910	2.05%
“ green performer	Lou Dillon, ch. m., (5) by Sidney Dillon	1903	1.58%
“ gelding	Highball, b., (7) by Dr. Hooker	1908	2.06%
“ stallion	Colorado E., b., (4) by the Bondsman	1910	2.04%

Trotting in Races

½ mile to wagon	Major Delmar, b. g., by Delmar	1911	1.00
Fastest heat	Hamburg Belle, b. m., (7) by Axworthy	1909	2.01¼
“ stallion	The Harvester, br., (5) by Walnut Hall	1910	2.02
“ gelding	Uhlan, bl., by Bingen	1909	2.03%
“ yearling	Pansy McGregor, f., by Fergus McGregor	1893	2.23%
“ 2 year old	Native Belle, b. f., by Moko	1909	2.07%
“ 2 “ old colt	Justice Brooke, b., by Barongale	1910	2.09%
“ 3 “ filly	Czarevna, ch., by Peter the Great	1909	2.07%
“ 3 “ colt	Colorado E., b. c., The Bondsman	1910	2.04%
“ 4 “ “	Joan, b. m., by Directum Spier	1910	2.04%
“ 4 “ “	Directum, b., by Director	1893	2.05%
“ 5 “ “	The Harvester, br. h., by Walnut Hall	1910	2.02
“ 5 “ “	Uhlan, blk. g., by Bingen	1909	2.03%

Trotting—Half-Mile Track

EVENT	NAME OF HORSE	Date	Record
Fastest mile	Uhlan, blk. g., (6) by Bingen	1910	2.05½
1 mile by a mare	Sweet Marie, b., by McKinney	1907	2.07
1 " " stallion	Cresceus, ch., (9) by Robert McGregor	1903	2.08
1 " " a yearling	Beneat, b. c., by Bingara	1910	2.34½
1 " " a 2 year old	Al Stanley, rn. c., by Todd	1908	2.20
1 " " a 3 " "	Muda Guy, b. f., by Guy Axworthy	1909	2.12½
1 " " a 4 " "	Pat L., b. c., by Republican	1896	2.10½
1 " in a race	Sweet Marie, b. m., (11) by McKinney	1907	2.08

World's Records—Pacing

½ mile	Dan Patch, br. h., (7) by Joe Patchen	1903	0.56
1 " " in the open	Dan Patch, br. h., (9) by Joe Patchen	1906	1.55½
Fastest stallion	Minor Heir, b. h., (7) by Heir-at-Law	1910	1.58½
" gelding	Dan Patch, br., (9) by Joe Patchen	1905	1.55½
" mare	Prince Alert, b., (11) by Crown Prince	1903	1.59½
" yearling colt	Daniel, b., (10) by Alcander	1903	2.00¼
" " filly	Frank Perry, by Toddington	1911	2.15
" " gelding	Belle Acton, b., by Shadeland Onward	1892	2.20¾
" 2 year colt	Rollo, gr., by Jerome Eddy	1891	2.28½
" 2 " old filly	Directly, blk., by Direct	1894	2.07¾
" 3 " colt	Fleta Dillon, b., by Sidney Dillon	1909	2.08¾
" 3 " old filly	Del Ray, by Nutwood Wilkes	1911	2.05
" 3 " gelding	Miss De Forest, by The De Forest	1911	2.05½
" 4 " colt	Hymettus, b., by Zombro	1907	2.08½
" 4 " filly	Online, b., by Shadeland Onward	1894	2.04
" 4 " gelding	The Maid, b., by Hal Index	1899	2.05¾
" 5 " " "	W. Wood, by Steinway	1892	2.07
" " " "	Coney, blk., by McKinney	1900	2.02¾
" 5 " " stallions	{ Searchlight, br., by Dark Night	1899	2.03¾
" " " "	{ Audubon Boy, ch., by J. J. Audubon	1902	
" " " "	{ Don Densmore, by Pactolus	1911	
" 5 " " mare	Lady of the Manor, ch., by Mambrino King	1899	2.04½
" green performer	Minor Heir, br. h., (6) by Heir-at-Law	1908	1.59½
" gelding	My Star, ch., (8) by Wilstar	1906	2.03¾

Pacing in Races

½ mile	Prince Alert, b. g., (10) by Crown Prince	1902	0.57¾
Fastest heat, stallion	Minor Heir, b., (7) by Heir-at-Law	1910	1.59
" " gelding	{ Prince Alert, b., (9) by Crown Prince	1901	2.00¾
" " mare	{ Boliver, b., (9) by Wayland W	1906	
" " yearling	Lady Maud C, ch., by Chitwood	1910	2.01½
" " 2 year old	Belle Acton, b. f., by Shadeland Onward	1892	2.30
" " 3 " "	Ecstasy, b. f., by Baron Wilkes	1898	2.10½
" " 4 " "	Del Ray, by Nutwood Wilkes	1911	2.05
" " 5 " "	Searchlight, br., by Dark Night	1898	2.04½
	Coney, blk. g., by McKinney	1900	2.02¾

Pacing—Half-Mile Track

1 mile	Dan Patch, b., by Joe Patchen	1905	2.01
1 " gelding	Prince Alert, b., by Crown Prince	1903	2.03½
1 " in a race	{ John R. Gentry, b. h., by Ashland Chief	1900	2.04¾
	{ Prince Alert, b. g., by Crown Prince	1911	

ARAB AND BARB All our running stock springs from the English Thoroughbred. In turn the English Thoroughbred owes most of its distinguished qualities, such as beauty, stamina, endurance and speed, to its Arabian blood. Arab horses have been used for centuries throughout Europe for the improvement of horse stock. The Saracen invaders brought with them 30,000 horses and some of these were left to the victors when the Mohammedan army was forced to retreat. Russia, Germany, France, Hungary, all have benefitted by this invasion of Arabian blood. The wandering Bedouins of the desert and a more southern race, the Anezah, are the most famous breeders of Arabian horses,—especially

the Anezah. These Anezah are descended from Ishmael, through the sheik Salaman (about 1653 B. C.) and it is to Salaman's famous Ajuz, chief mare of these stables, that the purest strains of today are traced. James I of England, in the 17th century A. D., imported to England descendants of these noble mares of the 17th century B. C., as also did later kings of England. In all it is estimated that 164 Oriental stallions of established record were taken to England, 90 of these being Arabian, 36 Barbs and the others being Turkish, Persian, etc. In America the history of Arab importations is brief: Ranger was brought to Connecticut in 1765. Up to 1860 about 42 Arab stallions had been brought to this country, and 12 mares: also 6 Barbs (4 stallions).

In more recent years these importations have continued. There is no special society in England or America which promotes the Arabian horse, but this breed stands in considerable popular favor. The general belief is that the Arabian can be relied upon to transmit its high intelligence, spirited style and wonderful endurance qualities. It is used everywhere to improve or restore depleted stock. The Arab is only 14 to 14½ hands high, and may be bay, white, gray, chestnut or occasionally black. The head shows intelligence, combined with sensitiveness and spirit. The body is inclined to be short, the croup is high, the legs and feet are superior and the muscle development is wonderfully suited to burden bearing.

THE THOROUGHBRED The English Thoroughbred or running horse has been developed in England for sport and pleasure. It is the oldest breed with an established pedigree. Its development represents the acme of energy, bone, sinew and muscle development.

The Thoroughbred possesses the greatest possible endurance at the running gait. One of its chief uses today in America is to grade and improve the blood of other running stock. The history of its development is one of exceeding interest, but we can refer only to the fortunate mixture of selected Arabian, Barb and Turkish blood on selected light English stock, giving today the eclipsing delicacy and beauty of form of the Thoroughbred along with real stamina, remarkable speed and extraordinary endurance. The Thoroughbred in America dates from the middle of the 18th century, so that this breed is of long established standing in this country.

AMERICAN SADDLE HORSE

A distinctly American breed is the American Saddle Horse. Indeed it is the most beautiful of American breeds, and in every way a noble animal. The pure drop in the veins of the American Saddle Horse goes back to imported Thoroughbred stallions, and especially to the blood of Denmark, a fine English Thoroughbred brought to Kentucky in 1839. The settlers of Kentucky, Virginia and Tennessee aimed at a saddle horse with some degree of the Thoroughbred's endurance and speed. Longer necked than the English Thoroughbred, our American Saddle Horse has a noticeably more graceful movement, with the spirit and endurance of the English animal but not its nervousness. With careful selection of the brood mares a variety of gaits have been made characteristic of the saddle horse, combined with a teachable spirit, making it easy to train to show a fox or single foot gait, a running walk, straight walk, or to trot or canter as desired. Saddlers range from the ladies' horse of 950 lbs. to the heavy saddle horse of 1050 lbs., height from 15.1½ to 15.2½ hands. As would be expected from the mixed breeding, the colors are various—brown, black or chestnut. A good saddle horse should have a spirited carriage in head and neck and tail, a neat body and a strong back for the saddle.

IV. Good Care

Scrub conditions make scrub animals. Some critics say the horse gets the least attention of any animal on the farm.

Whether true or not, such a general statement doesn't matter. The question is your farm: How about your horses?

The cost to keep a work-horse varies more than that of any other farm animal. In the first place a horse is fed for a different purpose, as it's not horse steak we're after, but horse sweat: in other less homely phrase, work and energy.

We value a horse as we do a man or a machine—for the work we can get out of him.

FEEDING We feed a horse to get this valuable return in energy, hence the rule: Feed wisely, temperately, in accordance with class or the amount of work to be done.

Feed well—enough, but not too much. Let up on the feed when the hard work season is over. Avoid "Monday morning disease" by more temperate feeding over the rest-day, Sunday. Don't feed the same whether working or idle. Safe to say most horses get too much anyway, and all sorts of indigestion troubles follow. Feed regularly—irregular feeding tends to the habit of bolting. Swallowing food without properly chewing it is a fault of many horses. If the trouble is with the teeth, have them attended to; if just a habit, put some round smooth stones in the feed box so that the bolter will have to nose around to get the food, hence cannot eat so rapidly.

DANGER FROM SUDDEN CHANGE

Any sudden or violent change is what plays hob with horses. A sudden change in the amount or way of feeding is almost sure to cause digestive derangements, generally colic; and from colic more horses die than from any other disorder. All forage should be clean and of the best quality. Water must be abundant, clean and pure always, as horses are easily affected from water impurity. Cases of colic are often traced to bad water. Salt is another necessity. See that your horses have constant access to salt—better still, a medicated salt mixture, as advised on page 46 where we give receipt for a good and cheap home-made stock salt, combining Stock Tonic.

AIR Your horse needs air—just 20 times as much air as you do. Pure air is more essential than warmth. Bad ventilation in the stable leads to catarrh, coughs, colds, chest diseases, and other serious conditions, among them the incurable diseases, glanders and farcy. Avoid drafts but insist on fresh air in your stable. If necessary, saw holes and protect from drafts by covering the holes with muslin.

LIGHT Your horse should have proper light in his stable for general comfort and health, but light direct in the face should be carefully avoided. Horses kept in dark stalls are frequently subject to eye disorders from the abrupt change to daylight. The floor of the hayloft should be seed and dust tight or there may be injury to the sensitive eyes or ears of your animals.

EXERCISE Don't let your horse get "soft" from lack of exercise. No matter how healthy he may be in other respects, when his muscular system is soft he cannot go fast or far, but soon shows exhaustion. Besides, without exercise he will suffer from uneven and drying hoofs, become lame, footsore or otherwise liable to disorder.

BLANKETS If a horse is in good health don't blanket him in the stable. The blanket may slip off while the horse is lying down, or a forgetful attendant may not think to put it on the animal. On the other hand, be sure to blanket when the animal is exposed outside to inclement weather. A \$5.00 blanket often will save a \$300.00 horse. Many teamsters and horse-owners make the mistake of throwing the blanket doubled over the hind quarters and loins, leaving the chest and fore-quarters entirely unprotected. This practice tends to draw the blood from the chest, making that sensitive part of the body especially liable to chill. A good deal depends on season and climate. The horse has active sweat glands—is perspiring continually when in normal condition. When the blanket will cause the temperature to go above normal, you see for yourself it will, when taken off, cause the temperature to fall unduly; and the sudden change is almost sure to bring trouble.

"COOLING OUT" After exercise the horse's temperature will rise considerably above normal. Whenever possible the careful driver will walk his animal for a mile or two before reaching home. A race horse is always systematically "cooled out" by his attendant before he is allowed the freedom of his stable or given water or feed. Then he is blanketed with two blankets—one to absorb moisture and the other to keep the body warm and dry. Suppose you let an overheated animal help himself to all the cold water he might want: The temperature of the body would quickly fall below normal, then keep on falling, and the horse would be an easy victim to chills, congestion, pneumonia or founder. So never let the temperature of a horse fall rapidly below normal.

YOUR HORSE'S COAT Horses should be clipped just before the new coat starts to come in. Clipping the ends of the new hair will make the new coat rough and harsh. All horses with long, heavy coat, or horses in a generally unthrifty condition are benefited by clipping. Many ills come from standing in a coat of long wet hair after hard driving; whereas the clipped horse dries quickly. Good care shows itself in the outward appearance of the animal—in his sleek and shining coat. A horse shows his condition in his skin more quickly than in any other way. When he is plump, close-haired, clean and contented you may know that he has had good fodder. When you see a scrawny, rough, hard-skinned, restless animal you may decide for yourself that his owner lacks both knowledge and love for the brute. This is true of all livestock. Their appearance speaks volumes for or against the owner. Learn the value of Conkey's Stock Tonic to improve the looks of your livestock.

FLIES Many a horse otherwise well cared for is left to the torment of summer flies, or at the most provided only with a net as an aid in switching them from his coat. The fly problem is a serious one, but by no means so hard to get around as many owners would seem to believe. In the first place, more care in the stable, especially in manure heaps, would lessen the trouble at its source. It is easy to disinfect these breeding places of flies, by spraying regularly with some proved "deterrent" such as Conkey's Fly Knocker solution. With such precautions in disinfecting and spraying, the stable will cease to be the danger spot it now is, spreading infection and disease throughout the whole neighborhood. In addition, spray the animal, especially before taking it out for a drive. This will keep the flies from the horse and prevent the fretting so wearing to the high-spirited driving horse. A fretting, tormented animal requires more feed to keep it in condition, hence spraying with Fly Knocker saves on the feed bill. It also saves shoes, as there is less stamping; and with less stamping, the stable floor will not call for repairs so often.

SOUND TEETH One of the first conditions for health is sound teeth. In addition to the disease germs bred in the mouth by bad teeth there is this fact: that sound teeth perform the very first step in the process of utilization of feed. Remember that the horse's food is not cooked and his teeth must be good, in order to properly masticate his rations. It is worse than throwing feed away to give it to an animal that can neither chew nor digest it. Poor feed and bad teeth are the cause of three-fourths of all the colics and digestive disorders of horses, says Dr. Clover, of the Colorado Agricultural College.

A horse's teeth should be examined at least once a year. As the upper jaw is wider than the lower, constant wearing may produce a sharp ridge on the inside of the lower molars and on the outside of the upper molars, which is easily felt on examination. These ridges are often as sharp as knives and are liable to cut the tongue and cheeks, when the pain will cause the animal to neglect proper mastication. Teeth so worn will often make a poor driver of a good horse; as he will jerk his head to one side, or throw his head in the air and jump when the tender place is touched by the bit. Always examine the teeth when a horse is troubled with indigestion; for bad teeth are a most common cause. A dental veterinarian will rasp these down to normal condition in a few moments.

SIGNS OF AGE The teeth of a horse, where not tampered with by professional "swappers" or horse jugglers, are one of the best means of telling the age. At the same time it must be remembered that while the age of a horse is an important factor in judging its value, some horses have more real usefulness ahead of them at fifteen years than many others have at seven. About twenty years is considered the limit of a horse's usefulness, though frequent exceptions are found where a good animal is useful at thirty. Up to the tenth or twelfth year the individual teeth offer fair evidence for judging age. After that time the age must be calculated by the general appearance of the teeth and the bones of the

head. When the horse is young, the roots of the teeth extend far into the bone and give the face and lower jaw a rounded appearance. As the horse grows older, the face becomes more concave, the jaws get thinner and sharper, the bones become more prominent, and the hollows above the eyes deepen. As the animal becomes still older, the hair turns gray about the muzzle, and the general appearance of the face indicates advancing years.

A HORSE'S TEETH

The adult horse has twelve teeth for biting, called incisors, six in each jaw within the lips. There are twenty-four molars, or "grinders," with which to grind or masticate the food. Of these there are six on each side of the upper and lower jaws. In males there is an extra tooth, called the bridle or canine tooth, on each

Changes in canine tooth or "tusk" (not found in mares)

side of each jaw, between the incisors and the molars. These may sometimes be found in mares, but they are usually small and undeveloped. Small, extra molars are sometimes found forward of the first molars on the upper jaw (rarely on the lower), commonly called "wolf teeth." They are useless, and also harmless, although old-time "hoss doctors" blamed them for many eye troubles.

The different molars are indicated by numbering them from front to back, calling right and left, as the **second right upper molar**. The incisor teeth take their names from their position; the two middle teeth are called the central incisors; one on either side is called a lateral incisor; and the two outer ones, one on either side, are called the corner incisors.

A horse has, in his life time, two sets of teeth. The first temporary, or "milk" set, twenty-four in number, consists of twelve incisors and twelve molars. There are three incisors and three molars in each side of each jaw. They are smaller and whiter than the permanent set, and have a "neck," or constriction, at the gum.

The temporary teeth in colts are cut as follows: When born, a colt has three molars on each jaw, and the two central nippers or incisors. They may be covered by a thin skin which breaks in a day or two. The lateral incisors are cut at from four to six weeks; and the corner incisors at from six to ten months. At one year old the colt has a full set of twenty-four temporary teeth.

The two central incisors are shed at about two and a half years, and the permanent ones are in use at three years. The lateral incisors are shed at three and a half years, and the permanent ones are in use at four years. The corner incisors are shed at four years and a half, and the permanent ones are in use at five years.

FACTS

ABOUT FEET

"No foot no horse" is a trite but truthful saying. Keep the feet in good shape. The greatest care a horse's feet is not in curing them after they are knocked out, but in keeping them in good working normal condition. In their

natural state the horse's hoofs would never become hard and contracted—their contact with the earth and herbage would counteract such a tendency.

In the natural state the concussion of each footfall is lessened by the elasticity of the ground, by the soft, pliable condition of the foot itself, and by various details in its construction all fitted to the purpose—such as the frog, arch of the sole, plantar-cushion, etc.

This is the natural pliable condition of the foot when the animal runs in the natural pastures; but if kept long in stables or worked on paved streets or hard dry roads, the foot entirely dries out. The hoof substance contains 25% water in normal healthy condition. As it loses this water the hoof shrinks, hardens and cracks. Some say grease the hoofs. But the grease enters into the porous substance, driving out the water and keeping it out. The frog of the foot, being softer in its composition, is all the more sensitive to conditions, and when deprived of moisture in the natural manner, it shrinks and hardens even to a greater degree than does the outer horn. Remember the horse's hoof, when in healthy condition, undergoes natural expansion (1/50-1/12 in.) every time it touches the ground. If dried and hardened from unnatural conditions, the result is sure to be cracked hoof or quarter crack, contracted hoof, etc.

Plainly, the old-fashioned practice of burning a shoe into the hoof in order to make it "fit better" (i. e., make the horse fit the iron shoe, to save the smithy trouble) was the frequent cause of cracked and contracted hoof. Standing on hard stable floors, working on hard dry roads, are now the usual causes. Treatment consists in keeping the feet in natural, pliable condition. Grease doesn't do this for reasons explained above. We suggest the following treatment:

RIGHT TREATMENT

Wash the hoofs clean with good soapy water, or better yet, with Noxicide* solution. Then apply Conkey's Hoof Remedy as directed, which, as it has a lanolin (wool-fat) base, will hold moisture; and, as it penetrates every fibre of the horny substance, carries its healing properties to the various parts of the hoof and expands the fibres. Repeat the operation every second day while under treatment, applying the remedy also along the coronary band. If necessary to pack the hoof use Conkey's Hoof Remedy mixed with bran, to a heavy paste. Never use cow-dung or similar disease producing packing. This treatment cannot be improved on.

Soaking the horse's feet every week for ½ hour, using a wide wooden tray or a tub, with an inch of Noxicide solution in it, is recommended for preventative treatment. An inch depth of water will be enough, since the moisture will be absorbed from the bottom of the foot, not through the horny walls of the hoof. Such a soak-tub can be easily made at home and will be found very convenient, as it can be carried to different stalls as needed.

Diagram of Healthy Hoof

A, wall; C, bars; D, buttresses; E, cleft of frog; F, sole; G, leafy layer; H, frog; I, branches of frog; K, horny bulbs; L, middle cleft of frog; AA, toe; AB, sidewalls; BD, quarters.

*Conkey's Nox-i-cide Dip and Disinfectant, mixed with water according to directions.

WHO'S YOUR HORSESHOER?

Don't trust too fully that every blacksmith knows all he should or can give all necessary attention to your horse's hoofs. Watch the feet yourself, and keep them healthy and clean. Hoofs on the hind feet grow faster than those on the front feet. On the average the hoof grows at the rate of $\frac{1}{3}$ in. per month. If not kept trimmed for even contact with the ground the result is a split toe or other crack in the hoof substance. Keep them trimmed and save all this trouble later.

- a—Angle is too acute, gives greater length of hoof in contact with the ground; greater expansion of the heel.
- b—Regular hoof, foot axis straight, angle 45 degrees.
- c—Stumpy foot, short hoof, less expansion of the heel.

- a—Foot axis broken backward, from toe too long.
 - b—Well balanced foot.
 - c—Foot axis broken forward, from overgrowth of the quarters.
- Dotted lines through the hoof show how to correct the axis by cutting.

Occasionally it is necessary to use the rasp to correct faulty development, but care must be taken not to abuse it, as blacksmiths sometimes do. Frogs, heels and bars should not be mutilated with the knife. Shoes should be set once a month to prevent the feet from becoming too long, and the horse should have plenty of exercise to maintain the foot's healthy condition. Washing thoroughly every few days and applying a quick dressing of Conkey's Hoof Remedy will, under most conditions, keep the horse's feet in perfect order.

PATRONIZE A GOOD SHOER

Neglect of the feet is always expensive. Learn how to take care of them properly, especially during the laying-up period. Or better still, select a horseshoer who knows his business, and spend about fifty cents a month for trimming and examining the feet of your unused horse. It will save the horse, the shoer and certainly the owner much future trouble; and for the owner trouble means more money expended. Thrush, seedy toe, crack, etc., are some of the diseases that follow overgrowth and stable neglect of a horse's foot.

WHO CURRIES YOUR HORSE?

The care of the horse's body, his daily grooming, can be given in two ways—a right way and a wrong way. Proper grooming is exceedingly important to the health as well as appearance of the horse. It does more than clean the coat from any surface dirt; it opens the pores so that the body poisons can be more readily thrown off through these important channels; invigorates circulation so that every organ is stimulated to activity, and relaxes muscles and nerves and soothes by the stroking.

A horse should always be groomed after hard exercising. Some owners take pleasure in doing this themselves, and doing it well; others call in the first farm hand "handy" and don't always wait to see if the work is well done. Besides, there are some important things about grooming which horseowners themselves do not always seem to know.

THE CURRY-COMB

One of these is the use of the curry-comb. This instrument of torture should be used sparingly on the body of a horse, never on the legs. Its best use is to clean the brush.

HOW TO CLEAN A HORSE

Here are the proper things for cleaning a horse; curry-comb, dandy brush, body brush, rubbing cloths, chamois skin, sponge, pail of water and wisp of straw. Never clean your horse in the stall any more than you would black your boots in bed. Take him outside if the weather is right; if not, cross-tie him in the open stable and proceed as follows: Dampen the wisp of straw, twist into a rope two feet long and tie a knot in it. With this wisp start at neck and rub vigorously both ways of the hair over every part of the body and legs. Next take body brush and curry-comb and brush the right way of hair. Remove the dirt from the brush by drawing curry-comb through it at intervals. Next take sponge and wipe eyes, nostrils and muzzle. Raise tail and sponge legs and between them. Next take a foot hook, lift up feet and pick any foreign substances, examining feet for loose shoes, etc. Now hold each foot over water pail and scrub with water brush; then wipe with sponge. By this time the coat is dry from sponging. Take rub cloths and smooth the hair with long, even strokes. Apply Conkey's Hoof Remedy with small brush, covering all parts of the foot. Dampen dandy brush and brush mane and tail carefully. If there are any chafes or sores on body or legs, apply Conkey's Healing Powder. If hair is worn off or skin harsh in spots, apply a little vaseline or bland oil.

This operation has taken about thirty minutes, the animal is clean to his skin, and he has not been tortured by the curry-comb.

THE SHEATH Geldings and stallions should have the sheath washed as often as is necessary. Use a soft sponge, warm water and a few drops of Conkey's Pi-No, enough to make a bland, soapy solution, which will quickly remove any accumulation and in addition leave the sheath what is called surgically clean, so that all danger of infection is positively avoided. Soap is apt to be astringent and harmful. Do not ever apply grease or oil, as it has a tendency to collect dirt and favors germ development. If soap is used, be sure to rinse well with clear water so that no trace of suds remains to irritate the delicate membrane.

SHIPPING AND SEASONING HORSES

Horses should be in moderate flesh for shipment and in good health and well exercised condition. The tails should be well braided and done up in burlap to prevent injury. Good laxative food should be given for twenty-four hours before shipping. The safest way is to ship them bare-footed after rasping the edges of the hoofs to prevent breaking. A horse should not have too great an amount of room in a car, as he is likely to be thrown and injured. When unloaded, horses are often very hungry, and care should be taken that they do not overeat when their tired and nervous condition invites indigestion. Conkey's Distemper Remedy is valuable right at this time. It should always be used for the so-called shipping fever and all cases where symptoms of either chills or fever are noticed. Care should be taken to get the horse back to its normal condition. If the horse seems simply fagged out without direct symptoms of cold or fever, Conkey's Horse Tonic will be found the greatest regulator, as it puts the animal in the best possible condition in the shortest possible time.

Horses that are shipped in from a distance and are unaccustomed to the climatic conditions and general surroundings, are usually called green horses, and they do not become "seasoned" until they are thoroughly acclimated—used to the feed and water, and well used to the work. Such animals are usually fat and out of condition, and while they may seem full of spirit and ambition, they are "soft" and should not be given hard pulling or driving. At this particular stage a horse's ambition can be

destroyed while he is yet young; and he is likely to become an unsound, played-out horse before he has reached his natural prime. Light work and good care, for a season, will temper him to the new conditions, preserve his best qualities, and make him a useful animal.

Treat your horse right and he will work for you full twenty years.

Start all horses gradually into heavy work, especially the colts. Give the muscles time to harden and develop to meet the strain.

THE COLLAR Look well to the collar, the center of strain and the center of power. See

that it is neither too big nor too small, but fits easily and does not torture. Most injured shoulders are the result of badly fitted collars. Let your harness-maker fit the collar to your horse, removing the padding or making the collar over if necessary to make it fit nicely. Poorly made or poorly fitting harness makes a big difference in horse power. Clean the collar of all sweat and dirt, for dirty collars are a common cause of sore shoulders. The greatest strength of a horse is limited by his own worst point, or the most serious fault with his harness.

Many a horse is blamed for faults that are his driver's.

THE BIT For instance, "pullers" are made, not foaled. Change to a milder bit.

A rubber covered mouth-piece will cure many a case of pulling. The bit should be just above the "tush," with check-strap short enough to keep the bit from coming in contact with the nippers, and yet long enough to leave the mouth easy at the corners.

A frosty bit is a good thing to put in your own mouth some cold morning if you want to see how it will make an animal behave.

A good bit is one that gives most control to the driver, both for speed and direction; and yet does it with the least annoyance to the horse. The half-check snaffle bit used nine times in ten has no flexibility. Try a Liverpool bit for driving and a Weymouth bit for riding.

THE GOLDEN RULE Feed well, care well, drive well—and you'll probably get on without doctoring.

WHAT RUINS HORSES Nagging when on the road, always driving at highest speed, twitching the lines, touching him up, pulling up with a short stop, starting off with a burst of speed—will ruin your horse, so that he will probably last you about two years, and then be "knocked out" for use on the road.

A horse has nerves, same as you and I. Don't keep him keyed up at fever heat. The more spirited the animal thus treated, the greater the outrage.

Gentleness, kindness, quietness are the prime requisites in handling animals, and especially horses.

WHEN A HORSE BALKS

Every horseman has his favorite treatment for balking—some humane, but most of these “cures” are extremely inhuman. It is usually foolish to whip or scold or otherwise abuse a balker—it only increases the animal's resentment or nervousness, whichever has caused the balking.

Often kindness is the only thing necessary to get the horse started—a little petting, coaxing, perhaps an apple or a lump of sugar. Sometimes it is necessary to distract the aggrieved animal's attention, and one of the best ways to do this is to get down and hold up one forefoot for a few minutes, or pound on the shoe (lightly) with a stone. If a bad case, take a little time for the following, not forgetting to give the animal first a little petting: Go to the bits. With a strap fastened around one front leg between the hoof and fetlock draw up the foot, if necessary tying it up, by fastening the strap to the hames. The horse will soon get tired of this three-legged business, but let him have a full treatment, holding him by the bit and “whoaing” him kindly at each attempt to start. When thoroughly tired of this balking, let down the foot and you will probably have no more trouble. However, repeat the treatment if necessary the next time, giving him a longer taste of it.

WHEN YOU BUY A HORSE

When you buy a horse there are two places you want to test him: in his stall and outside, putting him through his paces. In his stall he will likely show any stable vices he may have, such as weaving, cribbing, kicking and crowding, etc. Weaving is a swinging of the body from side to side for hours at a time. Some horses are continually kicking and pawing at the sides of the stall. Cribbing is sometimes prevented by buckling a strap around the horse's neck, just back of the ears. When you see such a strap you can suspect a cribber. Notice particularly if the horse stands squarely on his feet, without “pointing” a foot to get relief from lameness or soreness. Look out for halter-pulling, which is very annoying. If a horse is gently made to stand over in the stall he may show evidence of stringhalt and his hind feet seem fastened to the floor, while it might not be noticeable if he was made to jump about in the yard.

OUTDOOR EXAMINATION

You want to see your prospective horse outdoors before you buy him. There you can put him through his paces, test his action. Watch the head and neck when testing for lameness. If the horse has a foreleg lame he will lift his head each time; if a hind leg, he will keep his head down.

Outdoors, where you have plenty of good light, go over the animal point by point, examining every part of the body for defect or disease. Don't simply look at his feet and legs. Don't trust your eyes. Examine legs, shoulders, etc., with the hand as well. Irregularities are then plainly noticeable. If he has quality let him show it all over.

EXAMINATION IN DETAIL

Begin at the head, and go over first one side and then the other. Examine as follows:

The nostril for suspicious discharges; the mucous membrane lining should be a bright, healthy pink, free from disagreeable odor. Watch for signs of recent cleaning and be suspicious of a dull,

bluish color. The mouth should be looked at as to age and bad teeth, which mean poor mastication. The tongue should be healthy and without offensive odor. Notice if glands are enlarged or grow fast to adjoining tissues. Look to the eye; shade it and expose it quickly to light to see if the pupil dilates naturally; it should also be free from specks and cloudiness, though the regular "soot-spots" are natural and should not be noticed. Examine the eye for discharges and inflammation.

The throat should be free from any thickness or enlargement of the glands. Examine the head for any evidence of Poll Evil and for swelling, and see if the horse will easily allow the bridle and halter. Examine the withers for fistulas, running sores, tumors, galls, collar boils, and sweeny. Look for capped elbow or shoe boils. See if the knee has a bony enlargement, or scars which would indicate stumbling. Look for all scars or bunches showing hitting or "interfering" of opposite feet in action. Feel for splints on the inside of the fore leg and for bony bunches on the outside. See that back tendons are smooth and that the animal is not knee-sprung as it stands squarely on its feet. Watch out for "firing" marks indicating past lameness. The fetlock and pastern joints should be examined for ring-bones, bunches, etc. Lameness is often disguised by hypodermic injections of cocaine, so watch out for small puffy places over the large nerves. Scars at these points would indicate that the animal has been "nerved," which is usually the operation of cutting the nerve for navicular disease. At the top of hoof on either side, see that the lateral cartilages are not ossified, forming sidebones. See that the walls of the hoof show no evidence of seedy toe, sand cracks, or quarter cracks. Examine the bottom of the foot for corns and the cleft of the frog for thrush.

Now go over the side and belly looking for tumors and hernia; and, in the male, the penis and sheath should be looked to for tumors and disease. The muscles of the hip should be examined for scars, and the stifle joint for enlargement or tenderness that would point to stifle. Examine the hock joint for capped hock, curb, etc. Look for both bone spavin and bog spavin. At the point of the hock look for thorough-pin. Below the hock look for ring-bone, scratches and foot diseases. Now take the other side in the same manner.

Look for symmetry of both sides; the hips, legs, nostrils, lips, eyes, etc. Listen to lung and heart action. See if head and tail are carried squarely—and you have a good idea of the worth of the animal.

BREED MORE— But the best thing is to breed more and buy less.

BUY LESS

Buying is a habit, often a bad one. There is no reason why the average farmer should not benefit himself and livestock breeding by raising colts for his own use and for market. Figure the profit of the average farm with a few serviceable mares put to pure-bred sires, and a few good colts every year—well fed, trained well and sold, say at about five years of age, when well broken to work. This country is coming more and more to be recognized as the best for horses. The United States actually leads the world in horse breeding today; but she doesn't know it!

Meanwhile American horse buyers are keeping up an old-fashioned and useless habit in importing so many horses when they can buy the best in their own country. Chief Rommel, of the Bureau of Animal Husbandry, says there is no equal to the American horse anywhere in the world. He says:

WHAT ROMMEL SAYS "Horse breeding is constantly improving. The farmers are going in for raising draft horses; and for good ones there is an eager market at prices which would have astounded the farmer a decade ago.

KENTUCKY—HOORAY! "The most intelligent breeding is being done in Kentucky. There they have had long experience and the farmers understand the principles back of the work. Practically no draft horses, however, are to be found in that region.

CORN DIET FOR DRAFT BREEDS "The best draft horses in this country are bred in what is known as the corn belt, which runs from Kansas and Nebraska, on the west, to Ohio on the east, and of which Iowa and Illinois are the center.

THE HORSE STILL KING "Figures show that horses are not diminishing—in fact, there are more horses in this country than ever. If the motor car has driven out the saddle and carriage horse generally, why is it that these are higher in price than before the motor car came?

"There is a better market than ever for the good horse—and a poorer than ever for the poor one."

The Evolution of a Horse

MULES

IT costs less to breed and raise a mule than a horse. The selling price is usually higher, quality for quality; the demand is always there. Besides this, a mule is usually marketable earlier than a horse, and keeps useful even longer. It is a common thing for mules to live twenty years or more in active service; and many live to thirty, even to forty years.

While mules should have just as good care as horses, they seem not to expect much luck in life; and with genuine philosophy, make the most of what they get. A mule will pull through under conditions that would make a horse give up life in disgust. A mule is tougher, hardier every way than a horse. Most authorities agree that the mule is less liable to disease. There is some dispute as to whether a mule requires less feed than a horse; but experience shows that at least the mule makes more thrifty gains on low grade feeds than the horse.

It is certainly true that a mule can do more work than a horse; and can work under harder conditions, over rough or hilly ground, and in the heat of burning sun. The mule is sure-footed—he has heels for hills. He comes down a hill at a cautious gait; but he takes a hill at a run, even when heavily loaded.

MULE POINTS This hybrid animal, the cross of mare and jackass, is said to get its body shape from the mare, together with the good horse qualities of courage and strength. Its patience, endurance, faithfulness and hardiness it gets from the jack, along with the jack's big head, large bones, and long narrow feet. There used to be an old-fashioned idea that this hybrid offspring would not inherit the constitutional defects of the mare; and mares past their usefulness for good colts would then be bred to jacks. Commonsense, and also a higher, more critical demand now call for the best quality in both dam and sire; and the really high grade mule today is dropped by a good specimen draft brood mare. The market demands good size, and style and finish, strong

bone, big barrel of the body, but not "paunched," and a foot as large as possible; although of course the mule foot is narrower and longer than the foot of the horse.

THE JACK The native jack, which is really the product of a crossing of all the imported breeds, the Poitou, Andalusian, Maltese, Catalonian and Majorca, is considered the best by most mule breeders in this country. The variable color of the native jack is a fault which more careful breeding is correcting; so that black will be the fixed color. The native jack is particularly healthy, and has larger legs and feet than any imported breed, which accounts for its preference here. Whatever the breed, remember the following points in selecting a jack: He must be at least 15 hands high, not fat but heavy, with strong bones, a broad chest, and good strong hips. Usually such a jack has a coarse head; but better sacrifice quality of the head for the important elements of strength and weight. Always select a dark color, because color plays an important part in the market demand for mules.

THE MARE The mare should be of good draft type, or a very good grade from Percheron, Clydesdale or Belgian; she should be a good individual, sound in health and without blemish. Look especially for a fine clean head, broad chest, wide hips, and attractive style and carriage. The mare should also be of dark color, on account of the market discrimination against light-colored mules. Remember that the trade demand is for a good draft type of body in the mule, and that the mule tends to inherit body form from the dam.

THE MULE HAS FRIENDS This country is appreciative of the mule. The Spaniards in 1591 first brought mules to America, most of these going to Mexico. But all through colonial times the mule was appreciated and George Washington, Henry Clay and other early Americans made a specialty of breeding them. The mule exactly suited the southern planters and was the animal relied on in working southern plantations. In later years, the strength and hardness of the mule have put him in favor for city work and general hauling. In fact, wherever there are hard conditions of work, or climate, or bad roads, you will find the mule making the best of it. In general, preference is given the female mule as the hardier and the better worker.

Missouri, Texas and Tennessee are the chief mule raising States, but Mississippi and Georgia are close followers. Alabama, Kentucky, Arkansas, Louisiana and both the Carolinas are important in the mule industry. There are now about 3,500,000 mules in this country, with an average value of \$150—a higher average than that of the horse. There has never yet been enough to meet the market demand, and the large numbers of mules offered in the stockyards of Chicago, Kansas City, St. Louis and St. Paul go quickly and always at good prices. In fact, enthusiastic breeders claim there is fully twice as much money in raising mules, marketing them when five years old, as is made in raising horses. It looks like a good proposition when you consider the following comparisons, namely that mules,—

- (1) Cost less than horses to breed and raise;
- (2) Are sooner prepared for market than colts;
- (3) Find readier sale, at any period; in any number;
- (4) Command more as colts than horse colts of equal quality;
- (5) Suffer fewer diseases and seem less liable to accidents.

Is it any wonder, then, the mule has friends?

Common Diseases of Horses

ABSCCESS An abscess is a collection or "gathering" of pus or serum which may form in any part of the body. It may be caused by a blow, by constant irritation or may be the result of infection. A swelling first appears which becomes hot and painful. At first it is hard but gradually softens and when it breaks open, discharges a large amount of pus.

If the abscess is slow in forming and remains hard, it may be softened by hot poultices, frequently changed. Use linseed poultice mixed with a few drops of Conkey's Nox-i-cide Dip and Disinfectant.

In case the abscess does not break of its own accord, it must be opened. For this purpose use a sharp, narrow knife, which has been placed in a solution of Nox-i-cide Dip and Disinfectant or sterilized by boiling in water for at least 20 minutes. Make an opening where the contents of the abscess will drain out easily. It is well to keep on poulticing for a day or two after opening the abscess.

The abscess is to be thoroughly cleaned once a day and washed out with a solution of Nox-i-cide Dip and Disinfectant, one table-spoonful Nox-i-cide to a quart of warm water.

Then Conkey's Healing Powder should be well dusted in. The mouth of the abscess must be kept open to allow the escape of the pus as it forms and a piece of clean cloth or oakum dipped in Nox-i-cide solution, same strength as above, can be inserted in the wound for that purpose.

APPETITE—ANY DERANGEMENT

Conkey's Stock Tonic mixed with the regular feed three times a day according to directions will improve the appetite, correct faults of digestion, and act as a tonic and regulator of all digestive organs. Examine the teeth for they may need attention.

ASTHMA— BROKEN WIND

The precise nature of these diseases is not yet perfectly understood. They most often follow on chronic indigestion, from the use of musty hay or bad grain; but may be inherited, as a delicate, round-chested horse seems especially susceptible. Sometimes the trouble comes from irritation of the breathing passages from dusty or dirty hay. In this case Asthma, Broken Wind and Heaves become very much alike. There is a short wheezy cough, labored breathing when the horse is worked, and all symptoms very much worse just after eating.

Treatment

Give Conkey's Heave Relief according to directions. Put the horse on concentrated, laxative feed, such as mash or bran or oats; and moisten both the grain and the hay ration with lime water. Feed small quantities at a time, so as to avoid any danger of overloading the stomach. The animal should be watered before feeding and never directly after a meal, nor should it be put to work immediately after eating. Build up the system and correct the digestion by the use of Stock Tonic according to directions. Keep up the Stock Tonic treatment for a considerable period—until the horse shows general improved condition. It is very difficult to cure these troubles, and treatment should be persisted in and not dropped as soon as the horse shows improvement.

AZOTURIA This is marked by a sort of paralysis of the hindquarters which comes on suddenly when a horse starts working after a rest of a day or so in the stable. The large muscles in the hindquarter feel rigid, and there is no sensation. The horse goes down, and can not rise. There is great pain, he sweats profusely, the temperature is not high, but

the pulse is very rapid. The urine is a very dark brown, almost black. The disease is sometimes fatal in from 12 to 36 hours. The cause is known to be over-production of nitrogenized substances, which accumulate in the muscles and blood from high feeding during idleness. In fact, this is often called the "Monday morning disease" because it commonly occurs after the rest-day, Sunday.

Treatment To excite action of the skin apply hot wet blankets to the body and cover with a dry blanket. (Or use a dry hot pack of salt or oats.) Rub the loins with Conkey's Warming Liniment; or use mustard for this purpose. Keep the horse on his feet, if necessary using a sling. Give a dose of aloes 3-6 drams to clear the bowels; then give 2 drams each of bromide of potassium and iodide of potassium, and continue using these last two at intervals of 2 hours for the first day or as may be required to calm the nervous excitement. Give a plentiful supply of drinking water of an agreeable temperature. If necessary, draw off the urine with a catheter. On the second day, saltpetre in $\frac{1}{2}$ ounce doses may be given twice daily to stimulate the kidneys. As the horse gets better, put on regular feed, with Conkey's Stock Tonic mixed in it according to directions. This will tone the whole system quickly and greatly shorten the period of convalescence. For quick relief some veterinarians advocate bleeding from the jugular vein, but this treatment should not be attempted by any but experienced horsemen.

Prevention Attention to feed and exercise will prevent this accumulation of poison in the muscles and blood. Cut down on such feeds as oats, beans, peas, etc., when the horse is not at work. A good rule is to give only one-half as much grain when horse is idle.

Another caution: In taking a horse out after a rest of a day or so in the stable, go slowly and watch for the first symptoms of dullness, stiffness, and profuse sweating; then stop immediately and get him into a box stall for treatment. Taken in time, Azoturia is seldom fatal; but it is a very dangerous disease when neglected until the horse goes down.

BARB-WIRE CUTS Often these are nasty things to heal but even the worst cases respond to Conkey treatment. If the cut is slight, dust on it Conkey's Healing Powder, which will unite the skin and soon heal the wound over. If deeper, use Conkey's Pain Lotion as directed, bandaging if necessary. If very deep, ragged and roomy, cleanse thoroughly with Nox-i-cide Dip and Disinfectant, one teaspoonful in a pint of soft water, and dress with Conkey's Pain Lotion. Pack if necessary with gauze or oakum, soaked in Pain Lotion of Nox-i-cide Dip and Disinfectant, two teaspoonfuls to one pint of water. In all cases get rid of barb-wire fencing in your pasture as its days of usefulness have passed and its presence is a constant danger to stock.

BARRENNESS If not due to actual disease interfering with normal functions this trouble can be corrected in one of the following ways:

Treatment If over-fat put the mare in good general muscular condition by proper exercise, work, etc., and careful feeding. If the trouble is not due to this simple cause, it is probably owing to unnatural acidity of the passage, and should respond to the following: Flush the vagina once daily with a solution of 2 ounces bicarbonate of soda in one-half gallon of water, used lukewarm. When the mare is seen to be in heat, have a veterinarian or other qualified person dilate the mouth of the womb and inject the solution again. Have stallion service after one hour and before two hours.

General good healthy condition is necessary for breeding. This general good condition is always secured where the animals are given Stock Tonic occasionally for tonic, alterative treatment. Stock Tonic is an excellent regulator, and puts the whole system in working order. It especially acts on the organs of digestion—and acts also on the walls of the blood vessels, increasing their contractile power. It builds health by stimulating natural functions; hence its common-sense efficiency.

BITES OF INSECTS Apply Conkey's Pain Lotion, to relieve all itching and reduce swelling. Pure Nox-i-cide can also be used if more convenient. Regular use of Conkey's Fly Knocker during the season of insect pests will protect your animals in the first place.

BIT SORES Keep the bit out of the mouth, and heal the sores with daily swabbing with Nox-i-cide solution, using one teaspoonful in a pint of water. Then put in a soft bit, and take care not to draw in too tight to the angle of the mouth with the check-pieces of the bridle.

BLINDNESS The most common eye trouble is periodic ophthalmia or "moon-blindness." Attacks usually come at night, and there is redness, tearing, sometimes a scum or blur over the eye, with the pupil contracted and slow to respond. After ten days or a fortnight the sight comes back but the blind attack will return periodically. After five to eight attacks cataract develops and the condition of blindness is then permanent. There is no way of curing this kind of blindness, or any way of preventing the return of attacks; but you can lengthen the period between attacks, and hence prolong the usefulness of the animal as follows:

Treatment Look to sanitation in the stable, for unhygienic surroundings have a good deal to do with periodic ophthalmia. Damp or wet surroundings increase the trouble. Low vitality favors it; hence the horse must be well cared for in general. It is supposed to be transmissible; so an animal with moon-blindness should not be bred. Keep the horse in a dark stall during the attack, or hang a dark cloth over the head. Apply to the eye Conkey's Eye Remedy, using a sprayer or a camel's hair brush or perfectly clean feather, or irrigate it with a medicine dropper, or simply swab with a piece of sterile absorbent cotton. Treat the general condition by giving Conkey's Stock Tonic, mixed with the regular feed, using 3 table-spoonfuls of Stock Tonic so as to keep the bowels active. If necessary to purge, give aloes or 1 quart of raw linseed oil.

Prevention Experiments and all observations seem to show that horses kept in sanitary stables, with good light, good general care, good food, etc., never have the first attack. After one attack, you can help the general condition, lessen the pain of the attack and lengthen intervals between attacks, but you cannot permanently cure. Look out for claims to the contrary. We have never known a horse kept in good general condition and with Conkey's Stock Tonic used in the feed occasionally for tonic, alterative treatment, that developed periodic ophthalmia. Stock Tonic insures good general healthful condition and acts as a preventative of the first attack. We should like to hear from horse owners with their experience.

For description of other eye trouble read under Eyes.

BLOOD OUT OF ORDER Symptoms vary, such as itching, swelling, etc. Sometimes actual sores or eruptions. Usually the horse shows a rough coat and general unthrifty condition. If there are sores, dust the surface with Conkey's Healing Powder as directed. To

prevent itching, wash the surface with a solution of Nox-i-cide Dip and Disinfectant, one teaspoonful in a pint of water, which will also save any chance of infection. This is surface treatment merely; but it takes more than surface treatment to correct blood condition. Hence look well to the feed, and give the animal tonic treatment with Conkey's Stock Tonic, mixed with the regular feed as directed. Keep this up for a week or two weeks, until the animal shows good condition. This tonic will be found mildly laxative and will keep the system open. But if a purge is needed give raw linseed oil. Never use castor oil for horses, as so often directed. Castor oil can be safely given to other livestock and to human beings; but it is frequently poisonous to horseflesh.

BOG SPAVIN— This is a soft swelling usually on the inner side of the hock, the result of some fault in the natural conformation of the animal; so that under special exertion (such as accident or hard pulling) there is a rupture or strain which causes an excessive secretion of the synovial fluid in the hock, causing a distension of the bursal sac, (a condition known as Bog Spavin); or dilating the vein just under the skin (which condition is known as Blood Spavin). The two conditions are easily confused. But a Bog Spavin is really a tumor, while a Blood Spavin is a varicose vein.

Symptoms The symptoms of Blood Spavin, or of Bog Spavin, are lameness, stiffness, with a soft, fluctuating swelling on the front or inner side of the hock, sometimes hot to the touch and showing general inflammation. Once started, the disease is in one sense hereditary, since the defect in conformation which caused it can be inherited.

Treatment Alternate applications of hot and cold water bandages should be made in the early stages. If the part is much inflamed, treat with Conkey's Pain Lotion to reduce the pain and inflammation, then apply Conkey's Absorbent according to directions. This will disperse or absorb the gathering without the pain and disfigurement of a blister, and does away with the cruel firing so often resorted to unnecessarily. The Absorbent does its work without blistering, leaving no permanent scar or blemish.

BOTS These are larvae of the gad-fly, which attach themselves to the walls of the stomach and intestines. The larvae are developed from eggs laid on the hair of the horse's body in summer, on the lower part of the neck, shoulders, and inner parts of the forelegs, around the knees, where they are easily licked off by the horse and so find their way to the stomach. If taken into the stomach between the tenth and thirteenth day after they are deposited, these eggs will develop into bots. Bots have been known to cause colic pains, but they are usually harmless, except in large numbers. In rare cases they have been known to work to the peritoneum, and thus cause death.

Larvae of the bot fly, attached to walls of stomach

Adult bot flies

Symptoms are a general unthrifty condition; presence of the matured bots in the droppings, especially noticeable in the spring of the year. Symptoms of general indigestion may be due to this cause.

Prevention is the best treatment, as follows: During July, August and September examine the horse on pasture every three or four days and if the eggs are found clip them off or rub off, using a cloth or brush dipped in Nox-i-cide solution, two teaspoonfuls to one pint of water. Spraying the horse regularly, with Conkey's Fly Knocker will prevent the fly or "bee" from alighting.

BRONCHITIS This disease is sometimes the effect of damp, badly ventilated stables, or it may follow an attack of influenza. Any irritating substance in the air, dust or smoke, may cause it. Look about for the cause and correct it.

Symptoms are rapid breathing, with rattling in the windpipe, especially in the chest; deep cough, which grows looser. There is more or less fever and high pulse, although these symptoms subside as the condition becomes chronic.

Steaming the nostrils

Treatment First relieve the symptoms by covering with a hot blanket and rub the sides of the chest with Conkey's Warming Liniment; or you can use mustard paste made up with vinegar. Give this rubbing twice a day. A wet pack about the chest is also good, but care must be taken not to let the horse get chilled in any way. Make the animal inhale steam from a pail of boiling water to which has been added 2 tablespoonfuls of Conkey's Pain Lotion or instead of a pail you can use the nose bag. Of course, the patient should be in a dry, well-ventilated box-stall, the temperature kept at about 65 degrees Fahrenheit as nearly as possible. For internal treatment, give Conkey's Distemper and Fever Remedy, 1 tablet 3 times a day as directed. The animal should be on sick diet, such

as bran mash, roots, grass, etc., which will have a laxative effect. As soon as the horse is on regular feed, Conkey's Stock Tonic should be mixed with the feed according to directions. This will keep the system open, and also build up the strength, toning and invigorating the body, so as to bring the patient back to normal good health.

BRUISED OR BROKEN KNEE

If there is merely a breaking of the skin put on a compress, and keep the part saturated all the time with Conkey's Pain Lotion until all inflammation is gone. keeping the horse's head tied up so that he can not lie down on the injured part before it heals. If there is no inflammation, simply a cut, dust the place with Conkey's Healing Powder, which will heal over quickly. If the cut is deep, clip the hair and wash the part with Nox-i-cide Dip and Disinfectant using a 1 per cent. solution, that is 1 teaspoonful to 1 pint of water; dry thoroughly, then dress with Pain Lotion and bandage. Repeat this dressing once a day, with pressure, where bandage can be applied. In a bad case, use splints. If the part gets very hot or swells, pus is forming, and the bandage should come off and this matter be drained off at once, and the wound irrigated with antiseptic solution, 1 teaspoonful Nox-i-cide to 1 pint of water; then dry thoroughly, dress with Pain Lotion and bandage. Dress daily until there is no more discharge. When the wound

is thoroughly healed, apply Conkey's Absorbent over the whole joint. Throughout this treatment keep the animal on laxative feed, Conkey's Stock Tonic will be excellent mixed with the feed, as it will keep the bowels open, and allay any tendency to feverish condition.

BURNS—See Scalds, page 109.

CAPPED ELBOW HOCK AND KNEE

This is an inflammation of synovial or lubricating sacs or "bursae" beneath the skin or under the tendons, due to bruised structure under the cap of the hock or elbow, caused by accident or some injury such as rubbing the hock in the stable, night kicking, or by the shoes of the fore feet pressing or striking on the elbow when the horse is lying down.

Symptoms are unsightly swelling of the hock or elbow, usually hot and tender, and filled with serum or blood; sometimes there is no pain, and the swelling may fluctuate. When chronic, there is a thickening of the structures.

Treatment consists in the complete rest of the part, and continuous wet antiseptic dressings, using Conkey's Pain Lotion on a bandage or in a pack made of bran. The bran pack, wet with Conkey's Nox-i-cide Dip and Disinfectant, 1 teaspoonful in a pint of soft water, will be thoroughly antiseptic, and very efficient, though not so soothing a treatment as Conkey's Pain Lotion. When the inflammation is out paint with Conkey's Absorbent, without rubbing. If the swelling is very large it should be opened to let the fluid or matter out, then regularly dressed as already described. If the case is chronic and contains a hard tumor-like bunch it should be cut out. A roomy box stall will prevent most cases of capped elbow, giving the animal room to lie comfortably without crowding the heel of the shoe on the elbow; or the shoe heel can be shortened, or a large stuffed ring can be adjusted around the leg above the foot. Plenty of bedding usually saves an animal from capped hock and capped knees; unless the horse has the habit of pawing the bedding. Hobbling the hind feet may keep the horse from striking the hock in kicking.

CASTRATION Colts are usually castrated when one year old; the best season being spring or fall when grass is good, the weather moderate, and there is no danger from flies. The operation may be performed when the colt is younger, which is easier and safer for the colt; but when performed too early, it tends to light development of the fore part of the animal. The operation is perfectly safe when attention is given to sterilizing the knife and keeping the animal in sanitary, disinfected quarters. Nox-i-cide Dip and Disinfectant, one-half pint in a gallon of water is a perfect disinfectant and germicide, and can be used to sterilize the knife and also to spray about the quarters. These simple precautions are no more than would be necessary for any surgical operation. The animal should be thrown, and the operation should be in charge of a qualified veterinarian. For at least two weeks after the operation give the colt special care, keeping him out of the wet or cold. Give him mash feed or other light diet. Conkey's Stock Tonic mixed with the feed will keep the system open, and act as an excellent tonic.

CATARRH COLD This is an inflamed condition of the mucous membranes, usually the result of a neglected cold, or it may come on from exposure. In nasal catarrh there is an offensive discharge from one nostril,

shivering, perhaps a cough and inflamed eyes. The horse loses appetite and shows a generally unthrifty appearance.

Treatment Spray the nostrils or swab with Conkey's Pain Lotion, or steam the nostrils with a nosebag or a pail of boiling water, using 1 oz. of Pain Lotion to 1 quart of hot water. Repeat 4 or 5 times a day if necessary, following directions under Pneumonia. If the throat is sore rub freely with Pain Lotion from ear to ear. Do not work the horse too soon but keep it warm, well fed on soft laxative feed, and steam the nostrils night and morning. Mix with the feed Conkey's Stock Tonic, as an appetizer and for general tonic treatment that will tend to lessen the discharge.

A good bran mash, well salted with the home-made Stock Salt already described (9 parts common barrel salt and 1 part Conkey's Stock Tonic) makes an excellent feed for a horse suffering from catarrhal cold or any feverish condition combined with cold.

CHOREA—ST. VITUS DANCE This is a nervous disorder, most often affecting young animals. It shows as involuntary twitchings and movements. Usually there is a jerking of the head or neck or some part of the body. When the trouble is with the muscles of the hind legs we call it Stringhalt.

Treatment is not very satisfactory. Rest and attention to sanitary conditions are important, with plenty of fresh air and rather rich, fatty food. In early stages a dose of 1 fluid ounce syrup of iodide of iron and one-half dram of powdered nux vomica, one ounce powdered scutellaria, one dram powdered anise seed, will do some good, given in the food once a day for two weeks. Conkey's Stock Tonic mixed with the grain feed is helpful as it eliminates body poisons and tones the general functions. Stock Tonic will not cure Chorea, but it will improve the condition and give nature a chance to effect a cure if cure is possible.

COLIC *Any abdominal pain is usually called Colic. But true Colic is due to trouble somewhere in the digestive tract. Such trouble is common in horses because of the great size and length of the intestines. With cattle, digestive troubles come almost entirely from the stomach; but with the horse the exact opposite is the case. The stomach of the horse forms a small part of the digestive tract, food is soon out of it but remains a long time in the intestines, of which there are about 100 feet. Probably 16 hours is the usual time, but often food masses remain for days so that poison accumulate and with heat and moisture germs develop rapidly. If the system is kept open, as with Stock Tonic treatments, the food masses do not accumulate; and any germs taken in with the food or water pass out of the body. If the bowels are kept clear there is really little danger from common digestive troubles or from germs which may be taken in along with the food. Watering the horse frequently is a help to keep the system open.

Treatment Must be prompt. If possible put the horse in a well-bedded box stall, but give immediately a dose of Conkey's Colic Remedy according to directions. The dose is small and can be given even in case of a sudden attack on the road. Then following directions on package, give a purge to clear the bowels. Or, with the hand clean out the hard, dry fecal matter as far as possible and make an injection of 3 or 4 quarts of warm water, using a tablespoonful of Nox-i-cide Dip and Disinfectant. If this is not at hand use soap or salt in the warm water; inject with a hose and funnel. Rub the belly with Conkey's Warming Liniment, then blanket the horse. Feed lightly for 24 hours. Do not exercise the

*For Enteritis (Inflammation of the Bowels), see page 93.

horse until all symptoms are over. Correct the mistakes in feeding which caused the trouble in the first place, and keep in mind that colic can be prevented largely by feeding regularly good feed, never overfeeding, and keeping a medicated salt before the animal, such as common barrel salt 9 parts and 1 part Conkey's Stock Tonic, mixed thoroughly and put where the horse can help himself. Also do not overwork your horse, or expose him to sudden changes, or water heavily when he is tired and over-heated.

COLIC—(Wind or Flatulent)

Colic attacks vary, so keep in mind the following: If there is gas from fermentation the belly will become swollen, the pulse rise, and the animal will show great weakness. He will move with evident pain and may or may not lie down. The expression of pain will be more constant than in the case of spasmodic colic.

Treatment Give Conkey's Colic Remedy to relieve the condition. If possible, have a qualified person tap the horse in the right side, as directed under Bloat in Cattle. (In the case of the horse, the right side, not the left, is punctured.) If the puncture is kept open with the canula, or a large quill, it will hardly be necessary to repeat the operation; but if called upon to do so it will be necessary to make a new puncture. Clean out the rectum with the hand, oiled for the purpose, then inject warm water as described above. For quick action of the bowels give a dose of 8 grams of barium chloride dissolved in a little water. This drug will act very quickly and while it will increase the pain temporarily it will not so much as arecoline or eserine. If the bowels do not move within one hour you may give one more dose of 8 grams of barium chloride, but this is seldom necessary.

COLIC (Engorgement) In this form of colic, overloading the stomach, the best treatment is simply to get a veterinarian to remove the fermenting contents with a stomach pump of the double-tube type. Drugs by mouth are practically useless. Belching, retching, difficult breathing, and the well-known dog-sitting position are common symptoms of Engorgement or Indigestion Colic.

COLLAR BOIL Badly fitting collars cause a heap of trouble ranging all the way from simple bruises to serious abscesses. If simply a surface sore, dust with Conkey's Healing Powder and the place will heal over quickly. If an abscess is formed, containing pus or serum, the swelling will have to be opened and this matter drained off. Treat as directed under Abscess.

CONDITION RUN DOWN Start at once with Conkey's Stock Tonic, mixed in the feed. This will increase the appetite, insure full digestion, tone up the body organs, increase circulation and if there are any worms in the stomach or intestines it will cause them to pass out of the system. Put the horse on good feed; and see that he has good general care, with plenty of fresh air in the stable and all necessary exercise. Give the quarters a general cleaning; and use Nox-i-cide Dip and Disinfectant in the cleaning water, or spray with this solution. General disinfecting of the premises is a wise precaution whenever an animal is ailing, as the body is then most liable to infection.

When looking around for the cause of the trouble, do not forget the teeth, for they may be needing attention.

Stock salt, made up according to our simple directions for medicated salt, namely: Common barrel salt, 90 lbs., Conkey's Stock Tonic, 10 lbs.,

(two \$1 packages) mixed thoroughly and kept in a dry place, where the horses can help themselves will prove a general conditioner, which can be safely left before the animals all the time as there is no danger of their overdosing when they are allowed to help themselves. This is a general anti-parasite mixture, as well as an appetizer and tonic, and will prevent worms, etc., in the stomach and intestines. If there are external parasites, such as lice, get rid of these promptly by the use of Nox-i-cide Dip and Disinfectant, diluting with water according to directions. Apply with a stiff brush, beginning at the head and rub briskly. If weather is cool, blanket the animal, so as to avoid any danger of catching cold from this treatment.

CONSTIPATION IN HORSES

This is usually best corrected by changing from dry feed to roots, grass or green forage. Be sure to give the horse all the water he wants to drink.

Conkey's Stock Tonic twice a day will increase the intestinal secretions and keep the system open. The regular use of Conkey's Stock Salt (see page 46) would prevent this common trouble. Regular exercise is also a preventative. In foals, give 2 to 4 ounces castor oil, or a soap-sud injection.

CORNS These are usually found in the inner heels of the fore feet as the result of bruises, often from pressure of the shoe. Usually the horse goes lame. If the corn is neglected pus may form, and if still neglected may even make its way out around the coronet, that is, top of the hoof, when the case becomes "quittor." It is wrong to keep cutting corns away, until the hoof bleeds and bleeds, as so many blacksmiths do.

Treatment Pare away the sole a little and put a few drops of Conkey's Absorbent on the corn, which will give immediate relief. Have the shoer lower the inside quarter to relieve the heel, and the corns will not come back. Of course if the corn has been neglected and is suppurating, it will be necessary to give a free vent to all the matter; then insert a plug of oakum soaked in Nox-i-cide Dip and Disinfectant solution, one-half teaspoonful to a cup of water. Sometimes it is necessary to put on a warm bran poultice; which, mix with a little hot water, adding a little Nox-i-cide, say a half-teaspoonful, to bran enough to fill one poultice boot.

CONGESTION OF THE LUNGS

This is most liable to occur in the spring and fall months—sometimes as the result of exertion when not in condition, or too sudden cooling off after hard exercise. The symptoms are fast breathing—sometimes a short hard painful cough; the horse hangs his head down, eyes are wild and staring, the legs straddled. Temperature and pulse are high.

Treatment Blanket at once and rub Conkey's Warming Liniment into the sides of the chest; or in emergency you can use mustard and water. A stimulant is needed so give one-fourth pint of whiskey every hour until relief. If necessary to relieve the bowels give a warm soap-sud injection up the rectum, using an ordinary rubber tube and funnel. Put the horse on light diet, adding Conkey's Stock Tonic according to directions. Continue the Stock Tonic treatment in the regular feed for at least two weeks.

COUGH See that the feed is not musty or dusty. If any dust arises from the hay, sprinkle it before feeding. If possible put the horse on grass for a while. Sometimes the symptom is traced to poor ventilation. Often it is due to neglected colds or other diseases.

Treatment is as follows: Give Conkey's Horse Tonic as directed, with feed, and three times a day give a cough paste, or electuary made up as follows:

One tablet Conkey's Distemper Remedy, ground flaxseed or ground elm bark and molasses sufficient to make up a paste or "soft solid" which can be smeared on the gums, tongue or teeth with a wooden spoon. This will be taken up by the saliva and carried down the throat over the irritated membranes, healing and easing the condition. If Conkey's Distemper Remedy is not at hand, ease the cough by rubbing the throat with Conkey's Warming Liniment; or in emergency use turpentine or mustard. Be sure to keep the horse warm, but have plenty of ventilation. Do not neglect a cough, for it may run into heaves.

CRACKED HEELS This condition is very similar to Scratches; which, also read. It is common in the spring and may be the result of working in sloppy weather or in cold drafts, freezing mud, etc., or in slush or mud after a thaw. Unsanitary stables and bad conditions for the feet may cause it; although certain horses are constitutionally more liable to it than are others. A horse that stocks badly may weaken the part, and it may crack. Overfeeding of grain, or unwholesome fodder may also cause it. Treatment is the same as for Scratches, page 109.

CRIBBING This is not a disease, but a bad habit, a "stable vice," and while strictly incurable, it can be lessened by putting the culprit in a box stall, where there is nothing on which he can rest teeth or jaw. Feed from a shallow box with oval edges, and do not let the horse have a chance at any sharp corners. It is a good idea to put the feed-box directly on the floor; as a horse will not crib on anything that is lower than the knees. There is another reason for putting a crib-biter into a box stall; namely, to get him away from the rest of the horses, so that they will not learn the same habit by imitation.

CURB This is a swelling on the back of the hind legs, usually about three inches below the point of the hock, caused by strain of the back tendons of the hock joint, the result of slipping, jumping, backing, etc. Horses with over-bent or "sickle-shaped" hocks are most liable to curb; hence it is sometimes called hereditary. The swelling at the back of the hock is hard, and at first there is lameness but usually this does not last longer than a month.

Treatment In the early stages rub the curb swelling with Pain Lotion and put on a tight bandage. This will take out inflammation, and often will entirely cure the curb in a week or ten days. In other stages, apply Conkey's Absorbent as directed on package.

DIARRHEA Looseness of the bowels is nature's way of trying to rid the intestines of matter harmful to the body. Diarrhea is more a symptom than a disease. Usually it shows imperfect digestion, tho it may be caused by worms or by purgative medicines. There is frequent discharge of semi-fluid dung and sometimes colicky pains. If continued, the animal loses flesh and appetite and shows a decided tendency to "run down". The first thing to do is to decide upon the cause, which may be

watering the animal when heated, or feeding musty or indigestible food, or a sudden change from dry to moist feed, bad teeth, which cause indigestion, or exposure to drafts when overheated. Correct the fault and put the animal on light feed. Do not try to check the diarrhea suddenly, but give a purge of $1\frac{1}{2}$ pints raw linseed oil (not castor oil) to clear the bowels, and relieve the pain by rubbing the belly with Conkey's Warming Liniment, then blanket warmly.

If the diarrhea does not cease after the oil has operated give wheaten or arrow root gruels warm, or white oak bark tea (1 ounce to pint of water) three times a day. Soon as the bowel discharges lessen put the animal on regular treatment with Conkey's Stock Tonic to stimulate and tone up the system. Feed rather lightly and keep the animal quiet.

(DYSENTERY) Develops from neglected diarrhea or from tuberculosis of the intestines. In dysentery blood and mucus are mixed with the discharge. Give dose of oil and follow same treatment as above.

(ENTERITIS) is inflammation of the bowels and is very fatal, especially where there is diarrhea. The horse is in constant pain, with quickened pulse and the strength is very much affected, all marked differences from Colic. The belly is very tender and should not be rubbed, but hot applications usually benefit. About the best treatment is to quiet the sufferer with powdered opium 2 drams, calomel $\frac{1}{2}$ dram, made into a ball, and repeated in two hours if seems necessary. Physicing will be apt to cause death. Recovery is doubtful in any case; but if the horse convalesces, the diet must be watched carefully. Bran mash made with linseed tea or slippery elm bark tea is recommended by some veterinarians, and in general boiled food should be given. Water in small quantities but often. An exclusive diet of skim milk for a week or so is urged by some authorities.

Above suggestions are given in case the owner cannot get hold of a qualified veterinarian and must treat the case as best he can. Of course, with all serious ailments we advise that if possible a veterinarian be called to watch the case, but directions here given are all made as definite and practical as possible as in many instances the owner must do the best he can for the animal himself. Advice is given with the assurance that it is thoroughly up-to-date and reliable practice, but with the caution that special conditions must be considered in each case.

DIGESTIVE DISORDERS Wherever there is digestive disturbance, use Conkey's Stock Tonic to correct the disorder and also for tonic treatment.

As a general preventative we advise occasional use of Conkey's Stock Tonic as directed, or regular use of the special formula already recommended; 90 lbs. common barrel salt, 10 lbs. Conkey's Stock Tonic, mixed thoroughly, kept dry. This makes a hundred pound mixture at a cost not to exceed \$2.50 the hundred. For efficiency it will do all that is claimed for any medicated, veterinary, stock salt, at a cost of only $2\frac{1}{2}$ cents a pound, at the highest estimate. It will serve as an appetizer and tonic, and have a very beneficial effect on the general condition of the animal. At the same time it is what is called an anti-parasite mixture, and will keep the animal free from internal parasites. We highly recommend this mixture (1) for efficiency, (2) convenience of doctoring, as the animals have access to it and help themselves, just as they need it, without any danger of overdosing, (3) cheapness, costing less than $2\frac{1}{2}$ cents a pound, (4) lasting qualities—the above 100 lbs. being sufficient for 25 head of live-stock for full two months.

Acute indigestion requires, as the first active treatment, a purge. For horses, use raw linseed oil, and not castor oil; as castor oil is now under suspicion of modern veterinarians as being injurious to horses. It may be used safely with all other animals. In all cases see if the teeth need attention.

DISINFECTING— The horse is the most sensitive of animals; and he is especially liable to infection from contaminated surroundings. A horse responds very quickly to any medical treatment; but of itself has comparatively little resistance to disease, whereas most animals have a great deal of resistance. Prevention is the safe, cheap method; and to disinfect regularly and thoroughly is one of the surest ways of keeping free from disease. Conkey's Nox-i-cide Dip and Disinfectant, which mixes with water, makes a highly satisfactory general disinfectant, deodorizer and germ-killer, cheap enough to be used liberally. You can ward off many threatening diseases if you attack them at the germ stage. You never know just where the danger may be lurking, and the only safe way is to disinfect thoroughly and frequently, going over walls, floors, etc., as elsewhere described. A good way to use Conkey's Nox-i-cide Dip and Disinfectant is right in the scrub pail or wash water. A half cupful to the pail makes cheap disinfectant solution. Nox-i-cide Dip and Disinfectant is handy for many emergencies. In case of cuts, wounds, etc., you must treat with an antiseptic first, and often with this attention the trouble will right itself without further treatment. Keep Conkey's Nox-i-cide Dip and Disinfectant ready for use, and use it. You don't have to be too careful, since it mixes with water and is cheap. Every drop of it is effective. Get Nox-i-cide Dip and Disinfectant and keep it handy, ready for instant use. Point it out to the new stableman, so he will know just where to find it.

DISLOCATION After the bones have been replaced, apply freely Conkey's Pain Lotion. This will ease the suffering and take out any inflammation.

DISTEMPER See Influenza, Pink Eye, Distemper or Strangles.

ECZEMA— Thorough grooming and cleansing of the skin is one of the best precautions against these disorders of the skin. Common soap sometimes causes the trouble. Exposure to constant rain is another cause. The use of Conkey's Pino in the grooming will often be the only treatment necessary, as it is an antiseptic and stimulating application. See directions for mixing with water. In the scabby, scaly form the parts should be well soaked over night in olive oil or Conkey's Pain Lotion, then washed with pure soap and water. Use same treatment for the suppurating forms of this disease, usually seen about the mane and tail. With these the hair should be clipped first, so as to get direct application. Any sores or chafed surfaces on the body will quickly heal over when dusted with Conkey's Healing Powder. Healing Powder should always be used under saddles, collars, etc., to prevent galling and chafing.

EYES Inflammation and temporary disorders of the eye should be treated with Conkey's Eye Remedy sprayed or annointed by means of a clean feather, a camel's hair brush or piece of sterile cotton. Exclude light from the eyes as far as possible during the attack, if necessary hanging a dark cloth over the head. Sometimes there are parasites in the eye (*Filaria Papillosa*) which show as floating threads in the aqueous humor of the anterior chamber of the eye, which can be removed by a surgical

operation. Cataract or general cloudiness or specking of the lens can be relieved by removal of the lens; but as this leaves imperfect vision, the operation is hardly worth while.

Where the attacks are periodic with symptoms of inflammation, tearing, and a cloudy or pearly color of the eyes with extreme sensitiveness to light, the disease is moon-blindness; and is incurable after six to eight attacks. General treatment as already given under moon-blindness will lessen the frequency of the attacks, and postpone the bad day of incurable blindness. Follow directions carefully.

EXOSTOSIS Any bony bunch or outgrowth from the bone should be treated with Conkey's Absorbent, applied as directed for Spavin, Ringbone, Sidebone, Splint, etc.

FEET Watch the feet all the time; for small causes lead to serious trouble with Contracted feet. Thrush in clefts of the feet, Corns, Quittor, Sanderack, Canker, Speedycut, Split Hoof, etc. Dressing with Conkey's Hoof Remedy will keep the feet from drying out unduly, as they are liable to do when horses are worked on hard, dry roads or stand on hard floors in stables. Watch the growth of horn, for uneven growth of the hoof brings about a change in balance—causing change of action, so that very serious troubles such as splint, spavin, curb, etc., are liable to follow. Many injuries to the foot are preventable, and whether preventable or not, are simplified when given immediate treatment, as in the case of corns, puncture, nail wrongly driven in the hoof, etc. Unsanitary conditions under-foot are a prime cause of disease. Clean up regularly and disinfect with Nox-i-cide Dip and Disinfectant, or any reliable disinfectant. Such diseases as Thrush, Canker, etc., are usually the result of neglect of sanitary condition. Keep the filth out of the stall, and see that the floor properly drains. Keep the feet clean, then with a brush apply Conkey's Hoof Remedy regularly. Put some on the coronary band as well as on the hoof proper; and if the foot needs a pack stuff with bran and Conkey's Hoof Remedy, which makes the best possible hoof packing. Or, you can use Nox-i-cide with bran, which also makes an antiseptic dressing.

FEVER Where the temperature rises above normal, as the result of some exposure, or some fault of digestion or derangement of bowels or bladder, so that the system poisons are absorbed instead of passing from the body, the best treatment is rest, careful diet, and for medicine, Conkey's Distemper and Fever Remedy in doses as directed. Keep the animal in a comfortable stall, if possible a box stall, with the temperature as near 60 or 65 degrees Fahrenheit as possible—free from draughts but with plenty of fresh air for breathing. He will not have much appetite, but make the ration as attractive as possible, giving such food as grass, bran mash, carrots, etc. Give the horse plenty of fresh pure water of an agreeable temperature. Conkey's Stock Tonic in the feed will increase appetite and also tone up the body functions.

FISTULA A fistula is a swelling containing tube-like channels through which the pus or matter discharges. Usually they are located on the neck and withers. Fistula of the foot is called Quittor, which see. Fistula is generally due to a bruise or other injury of the withers from a blow, pressure of the harness or catching the neck on a beam, bruising the ligaments and sometimes the bony structure, as at the withers. The prominence of the withers makes them liable to accident of this sort. There is inflammation of the bursae or lubricating sacs, as in Bursitis. A painful, soft swelling develops on one or both sides of the withers, filled with blood-

tinged watery fluid, not like the pus of an ordinary abscess. If the matter burrows, it may result in disease of the shoulder blade or the cartilage or spines of the vertebrae. The danger from fistula is increased the deeper it goes, just as in Poll Evil. For successful treatment the fistula must be "bottomed," that is, probed to the bottom, and thoroughly drained, as in the case of any deep abscess.

Treatment Hot or cold water fomentations will help the condition, but as soon as possible get Conkey's Poll Evil Remedy and use as directed on package. If taken at an early stage, simple treatment with Conkey's Pain Lotion will often effect a cure.

FLIES Protection from flies is not only humane, but practical sense in caring for your valuable property. A horse tormented by flies loses flesh, chafes and spoils in spirit, wears out his shoes by stamping, kicks and stamps out floors, and sometimes cracks a hoof. In addition, the flies lay eggs on the horse's body, whence they are licked off and find lodgment in the animal's stomach and so we find the common ailment called "bots in the stomach," which sometimes cause serious digestive trouble. Prevention of these various evils is easy with the use of Conkey's Fly Knocker, which if sprayed frequently on the animal will keep the flies from alighting, or it can be used to kill the grub already deposited on the body. Sprayed on walls, it helps to keep flies out of the stable. Sprayed on manure heaps, it kills the pests at their breeding place, and so settles the fly problem for a whole neighborhood, and promotes not only the comfort but the health of the neighborhood, as flies are known to be the carriers of typhoid and many other germ diseases.

FOUNDER—LAMINITIS This is severe inflammation of the sensitive parts of the foot, the Laminae, or leaf-like structures which surround the end and sides of the coffin-bone and are enclosed within the horny hoof. When these sensitive laminae are congested they press upon the hard walls of the hoof and the pain is intense; and especially when the horse is made to move or stand. Horses with flat feet, weak heels or those suffering from any lameness are most liable to this sudden inflammation of the feet, which may be brought on by any one of a variety of causes, such as sudden cooling off, drinking too much cold water, over-eating, especially eating new wheat and barley, new oats and new hay, when already in overfat condition; overdriving, bad shoeing or any constant strain on the feet may cause founder.

Symptoms Attacks are sudden; the horse seems afraid to put any weight on the feet affected. In a bad attack it is hard to get the horse to move at all. There is fever and a quick, full strong pulse, excited breathing and distended nostrils. The hoofs are hot to the touch, and if tapped with a hammer the animal groans with pain.

Treatment The advice sometimes given to "run the horses hard" seems to us unwarranted and cruel. Get the horse off his feet, which will relieve the pain considerably, then as quickly and gently as possible take off the shoes and foment the feet for one half hour with hot water applications, changing then to cold applications and continuing this treatment for several hours. Then apply Conkey's Pain Lotion liberally, and poultice, using a bandage or a poultice boot. Meanwhile give Conkey's Distemper and Fever Remedy for internal treatment, as directed on packages. Blanketing the animal will benefit by inducing perspiration.

If in two days the condition is not improved, that is, if fever and soreness seem to be increasing, the sole of the foot should be thinned and an opening made to let out any pus, then dress with Pain Lotion and replace the bandage or poultice. After the inflammation is all out, say in ten days or two weeks, apply Conkey's Absorbent to the pastern. This will stimulate activity and prevent the wasting away of the soft structures, and thus avoid danger of contraction of the feet, as in Chronic Founder. Also use Conkey's Hoof Remedy regularly to keep the hoof in healthy condition and prevent the unsightly deformities so often exhibited as the after results of Founder.

GALLS Saddle and Collar Galls are most common, but galls may come wherever there is chafing from dirty or badly fitting harness. Sometimes defective conformation causes them, and this requires that the saddle or collar be altered to fit the animal for which it is wanted. Sometimes this means only a little change in the padding; but even if necessary to re-make the saddle or collar this should be carefully attended to in order to insure the full usefulness of the animal. After the sore, chafed spot is once formed it is easily liable to infection, so that dirty, neglected harness often leads to serious trouble. Trouble usually starts with a puffy swelling; then the hair comes out, finally there is an open sore.

Treatment is very simple. Conkey's Healing Powder sprinkled on the surface twice a day will speedily cure even a bad case, for it works rapidly. If the sore has been neglected a long time or other treatment has failed to heal it, so that it has worked deeper, it should first be dressed with Conkey's Pain Lotion, which will keep the tissues soft, while healing. Results are not so quick as with the Healing Powder, but in the case of a deep sore it is of course not safe to heal too quickly from the outside, but to give the inner affected tissue plenty of time to heal from the bottom up before closing the surface.

Prevention consists in fitting the collar or saddle to the horse that wears it, dusting the skin with Conkey's Healing Powder wherever there is liability of chafing, cleaning all dirt from collars, etc., and wiping with a damp cloth and a few drops of Conkey's Nox-i-cide Dip and Disinfectant, which will keep the harness soft and free from the hard dirt ridges, so apt to cause chafing and pretty sure to be the source of germ infection.

GLANDERS AND FARCY These incurable diseases are invariably due to contagion from other affected animals, and are in fact so highly infectious that it is not lawful to treat any animal suffering with Glanders or Farcy, the law requiring that the horse be destroyed as soon as proof of the disease is established by re-action to the test with mallein. The general symptoms are hard swelling of the glands under the jaw, which appear to be fixed to the side of the jaw. There is no discharge from the swelling but there is a discharge from the nostril, (usually the left nostril) the result of an ulcerous condition of the lining membrane of the nasal passage. This discharge should not be confused with that in simple catarrh, strangles, or influenza, these latter being more constant. The discharge has no odor, is glutinous, and in acute stages is straw color. When pustular eruptions appear on the skin the disease is called Farcy. In acute stages of Farcy the glands of the leg ulcerate, and the limb suddenly swells up to enormous proportions. Glanders and Farcy are really the same disease, Glanders affecting especially the membrane of the nose and air-passages of the horse, while in Farcy the nodules (Farcy Buds) are on the surface.

Treatment is not warrantable, although iodine is undoubtedly helpful. Where Glanders is suspected from discharges that would indicate internal lesions, or where the condition is shown by external lesions, as in the case of Farcy, the law requires the mallein test, and if there is temperature re-action to the injection of mallein, the animal must be destroyed, its carcass and all woodwork in contact with the discharges must be burned, and the whole quarters thoroughly disinfected. Nothing is better for the purpose than a thorough washing of the infected quarters with a strong solution of Nox-i-cide Dip and Disinfectant.

If healthy animals are exposed, they must be injected under the skin with mallein, which serves as a protection.

GREASE HEEL This disease is very troublesome. It has some similarity to Scratches, being an inflammation of the skin of the heel, from exposure to cold and wet, or standing in liquid manure, or it may be from general neglect and wrong treatment of an eczema condition of the skin. The condition shows as inflammation in patches, the skin affected has a moist, greasy feel; sometimes there is an ulcerated condition with more or less foul discharge. In addition to this inflammation of the heel there may be a swelling of the leg, resulting in scabby sores.

Treatment Paint with Conkey's Nox-i-cide Dip and Disinfectant, full strength, several times, then bathe carefully with a solution of the same, using 2 teaspoonfuls in one pint of water. This will usually cure quickly, but if the condition does not improve rapidly, dust on a little of Conkey's Healing Powder. For internal treatment put the horse on Conkey's Stock Tonic, mixed with the regular feed. Animals in good blood are not liable to this disease; and we advise, as general preventive measure, the use of the special veterinary salt mixture elsewhere recommended as a general conditioner; namely, 9 parts common barrel salt, 1 part Conkey's Stock Tonic, mixed thoroughly and kept in a dry place, where the horse can help himself as needed. Used in this way, there is no danger of the animal overdosing; he will take it as needed, and by doctoring himself, save many threatened disorders.

HALTER PULLING This stable vice can be cured as follows: put an old saddle on the horse; then take about twelve feet of half-inch rope, pass this around the rump under the tail, bring the ends forward through the line rings of the saddle and then through the ring of the halter under the chin and tie the ends of the rope as a halter strap would be tied.

HARD HOOF Hard or drying hoofs can be easily prevented by regular use of Conkey's Hoof Remedy, used according to simple directions on package.

HARNESS AND COLLAR GALLS Conkey's Healing Powder prevents and cures. Read treatment under Galls.

HEAVES This common and troublesome disease is easily known by the quick, labored breathing, sharp, short cough, and the catch in the flank with each expulsion of the air in breathing. In its first stages the "heaving" and coughing are merely nervous symptoms, and the real trouble is with the digestion. When a horse develops "heaves" usually the feeding system is at fault. Feeding clover hay, feeding inferior or musty or damaged hay, or too much roughage (that is, too much bulky, innutritious feed), any of these are liable to cause Heaves. Feed more grain and less hay if your horse inclines to Heaves. Other probable causes are bad

ventilation of the stable or a musty atmosphere. It is sometimes called hereditary because a round-chested horse is inclined to Heaves; and if a round chest is inherited, susceptibility to this disorder is also "inherited." It is said that change from a high level to a low level will bring on the disease in some horses.

Treatment This has long been considered a difficult disorder to treat successfully. Usually the difficulty in treating is due to the fact that the horse is simply medicated for the Heaves, and nothing is done to remedy the condition which caused the trouble in the first place, such as wrong feeding, or bad or dusty air. There is no use to treat symptoms and absolutely neglect the cause. Remove the cause, then treat with Conkey's Heave Relief according to plain directions on package. We guarantee satisfaction. It is a waste of time to treat a horse with heaves unless you follow the below feeding directions. Conkey's Heave Relief does not contain any cheap liquid or filler but is all pure drug prescription. The treatment is scientific, and goes at once to the seat of the trouble, toning the weakened organs.

In a case of long standing where the horse is run down, use Conkey's Stock Tonic to build up the general condition. This is tonic, alterative treatment, which cures indigestion, gets the full value out of feed, increases the appetite, expels worms, and rids the body of the systemic poisons which accumulate so rapidly when there is any fault with the breathing.

In feeding a horse with heaves follow these general rules: Feed the best quality, but in the smallest quantity, so as to give the digestion as little as possible to do. Always water before feeding, or the undigested food will be washed out of the stomach. Do not exercise the horse too soon after feeding. Limit the horse to a small quantity of best hay once a day; and for other feed give carrots, potatoes, turnips, chopped and mixed corn or oats. Dark molasses can be used with this to great advantage.

Prevention Heaves usually affects unthrifty, run-down animals; and can thus be prevented by occasional treatment with Conkey's Stock Tonic, mixed with the regular feed as directed. Or, we suggest permanent use of the special veterinary salt described before for general preventive treatment, using 1 part Conkey's Stock Tonic to 9 parts common barrel salt, mixing thoroughly and keeping it where the horse can help himself just as he wants it. There will be no danger from overdosing, but the horse will doctor himself as he needs it. This will insure general thriving condition. This formula makes a most efficient stock salt, absolutely effective as a conditioner and at the low cost of less than 2½ cents a pound. One pound will usually last a horse about two weeks.

HIDE BOUND We say a horse is hidebound when the skin is harsh and "tight" and the coat staring. The condition shows poor nutrition. The horse may be eating well but the food is not properly digested. Lack of air or of salt sometimes cause this "hide-bound" condition. Conkey's Stock Tonic in the feed three times a day is the best treatment. As the appetite improves increase the feed. Groom well and look to general sanitary conditions. When the animal shows good normal condition, you can drop the Stock Tonic treatment in the feed, but we advise regular use of the veterinary salt mixture already alluded to, as follows: 90 lbs. common barrel salt, 10 lbs. Conkey's Stock Tonic, mixed thoroughly and kept in a dry place, where the horse can help himself as needed. There is no danger of the horse overdosing when allowed to get at this just when he wants it. This stock salt is effective as a general preventive. It is very cheap, costing when thus home mixed, less than 2½ cents a pound, 1 pound being sufficient for each animal for two weeks.

INDIGESTION

Sometimes the trouble is with the teeth, which do not perform the first process in digestion. It may be the horse is a "bolter" and swallows his feed without proper chewing. Worms are another common cause of symptoms of indigestion. The food may be digested perfectly* but the worms absorb most of it and the horse gets little benefit. The symptoms vary and according to the symptoms we call the disease anaemia (poor blood), colic, diarrhea, dysentery, gastritis, heaves, hide-bound, thin flesh, etc.

Treatment calls first for a purgative, mild or brisk, as the case may require; then tonic, alterative treatment with Conkey's Stock Tonic mixed with the regular feed as directed. Treat any condition showing rough, dry, unthrifty coat, dejected appearance, grain passed whole, etc., with Conkey's Stock Tonic. As preventative treatment give all animals a course of Stock Tonic occasionally; or use continually the special mixture already suggested as follows: 90 lbs. common barrel salt, 10 lbs. Conkey's Stock Tonic, mix thoroughly and place in a dry place, where each animal can help itself. There will then be no danger of any animal taking an overdose; but each will help itself as needed. This is a prime conditioner and one convenient to use, as each animal doctors itself. It can be cheaply mixed at home according to above directions. We guarantee full satisfaction with this formula. Try it and compare results with any commercial salt now sold for five to ten times the price. This treatment will cost only a cent a week for each head of live-stock, as a pound of the conditioner will easily last a horse or cow two weeks.

INFLAMMATION

Inflammation of any sort is best treated with Conkey's Pain Lotion, applied liberally as directed. This remedy can be used externally, as a dressing or simply rubbed in, or can be sprayed into the mouth, or injected into a deep cut or wound. It is absolutely safe to use.

INFLUENZA—PINK EYE—DISTEMPER OR STRANGLES

Diseases of this nature seem to depend on atmospheric influences and may come from any sudden check to the function of the skin or kidneys, as from chill, etc. Spring and fall changes in the weather usually bring these troubles; and one animal may infect another. Young animals seem most liable to suffer. One attack is said to make the subject immune; that is many claim if an animal has had the disease once, he will not get it again. It is at least true that the animal once attacked is unlikely to have it again.

Strangles

Symptoms Temperature is high and there is a hard, painful swelling under the jaws, between the branches of the jaw-bone. The breathing is much obstructed. This swelling is really an abscess; and as it softens, pus will break out, or it may require lancing.

Treatment Keep the animal well bedded with clean, dry straw; and keep the box-stall comfortably warm, free from drafts, but with plenty of ventilation. The quarters should be kept in a sanitary condition by the use of a liberal supply of Nox-i-cide solution (one-half pint Conkey's Nox-i-cide Dip and Disinfectant to each gallon of water) to prevent contagion. Do not "quick purge," but feed soft laxative foods such as gruels, mashies, steamed oats, grass, roots, especially boiled carrots; also cold

milk and linseed tea. Molasses in the mash will be helpful. The animal will have little appetite, and should be tempted. Give plenty of cool water for drinking, to which add night and morning one-fourth ounce of potassium chlorate. Three times a day give one-half dram quinine sulphate and one tablet Conkey's Distemper Remedy, thrown back in the throat or crushed in a little water and put on the back of the tongue with a long-handled spoon.

Good nursing is as important as good medical treatment, and especially is this true with distemper or strangles. The foregoing directions should be followed with care and regularity. In special cases, where there is much prostration, give Conkey's Horse Tonic as directed on package, and if the horse does not eat naturally, give him stimulants combining nutrients, every two hours; for instance, six ounces of brandy stirred up with eggs and milk. Fumigate the stable with Nox-i-cide solution and give the patient inhalations, using the nose bag or a bucket of steaming hot water with a teaspoonful of Conkey's Pain Lotion to a quart of hot water.

ITCH Proper use of Conkey's Nox-i-cide Dip and Disinfectant in the cleaning water will prevent itch, whether due to mange mites, follicular mange, (due to a vegetable parasite) lice, nervous eczema, or other causes. Nox-i-cide Dip and Disinfectant allays irritation, soothes, heals and is thoroughly antiseptic. In treating itch of any sort, it is always wise to treat the general condition as well as to treat locally. Build up the body functions, clean the blood, tone and invigorate the animal. You can do this with Conkey's Stock Tonic, used as directed. Never neglect a case of itch; for it will invariably bring a horse down to poor, unthriving condition. Where the itching is intense and immediate relief is necessary, apply Conkey's Pain Lotion.

LAMENESS Many and various kinds of lameness afflict the horse, due to faulty conformation or to accidents or neglect. Sometimes the seat of the trouble is hard to locate and we call the case "mysterious lameness." The veterinarian must find the cause, or the treatment is guess work. A great many cases of lameness are due to poor blacksmithing—it always pays to patronize a good horse-shoer. Lameness is most serious in the hind feet. Lameness behind can be told by a dropping of the head when the lame leg comes to the ground, whereas in the case of a forefoot, the horse lifts the head. Clean regularly to keep the foot sanitary, exercise regularly to keep the hoof level, and so prevent strains from altered axis; examine the feet regularly to insure against foreign substance, and to detect and treat bruises, nail-pricks, corns, etc., dress the hoofs regularly with Conkey's Hoof Remedy to preserve the natural elasticity of the hoofs and keep them from drying out when the horse is not exercised. All of these are necessary to insure the owner of a horse against sudden disability of his animal from serious lameness.

Treatment Where the lameness is due to soreness or strain, rub freely and often with Conkey's Pain Lotion, or apply as a dressing. If trouble is deeper, affecting the bone or producing a "bunch" or gathering of abnormal secretions, or if a counter irritant is needed, use Conkey's Absorbent. Conkey's Absorbent will even relieve Navicular disease, for which most veterinarians resort to nerve cutting. Note the difference in the treatment, Pain Lotion is to be rubbed on freely and often, if necessary bandaging the part with a liberal dressing. But Conkey's Absorbent is stronger treatment; in fact it takes the place of the usual violent blistering. Do not rub the Absorbent in, as it acts by absorbing without blistering or leaving a scar. Where you wish to treat by actual blister, use

Conkey's Blister, according to directions. Actual blistering is not by any means as necessary as is commonly supposed. Try the non-blister way and keep your horse from scar or blemish.

LAMPAS This is an inflammation and swelling of the fleshy bars of the roof of the mouth, back of the upper incisors. It is sometimes spelled "Lampers" and was so named on account of the old-style of burning with a "lamp" or hot iron. It is a natural condition in colts when the permanent teeth are coming in, and usually requires little or no attention. In fact it may be classed as one of the "imaginary diseases" along with wolf teeth and wolf-in-the-tail. The condition will soon change of itself, but the animal can be made more comfortable by the following:

Treatment Put the animal on scalded oats, boiled roots, mashes, etc., for a few days, using Conkey's Stock Tonic with the feed to tone up the general condition and keep the system open. This soft feed will be easy on the swollen gums. A common and very good treatment is to apply to the gums, three times a day, alum solution, using one ounce of alum to one quart of water. We advise making a few incisions about half an inch back of the teeth, and applying liberally Conkey's Pain Lotion, which is antiphlogistic, and quickly relieves the inflamed condition. On no account allow anyone to burn your horse's mouth for Lampas.

LEUCHORREA This is a whitish discharge due to inflammation of the mucous membrane lining the genital organs of the mare.

Treatment is simple, but must be persistent. Give an injection, or douche, once or twice a day, using one dram of permanganate of potash dissolved in one quart of water. Use water that has been freshly boiled, and cooled, each time you make this solution. Mix according to directions.

Another treatment, more expensive but especially effective, is Conkey's Horse Tonic to be given as a drench or in the feed. Conkey's Horse Tonic is a pure root compound, especially fitted for disorders of the generative system, the nervous system, or any out-of-health condition of brood mares.

LICE These are commonly found on the forelegs, especially on hairy-legged horses, but they may come on any part of the body. Poultry lice are very liable to attack horses if given the opportunity.

Treatment Rub the horse briskly with a brush dipped in Nox-i-cide Dip and Disinfectant solution, (see directions). Rub the horse dry, then blanket if the season requires it so that the animal will not catch cold. Conkey's Lice Powder, commonly used for poultry, can be used on horses also, rubbed or sifted into the coat, or blown from a lice-powder bellows.

LYMPHANGITIS-WEED This is a swelling, or "stocking up" of one or both hind legs, very seldom a foreleg. It starts up suddenly, beginning in the glands under the thigh or forearm, and spreading down the leg, sometimes extending even below the knee or hock. There is local heat, great pain and lameness so that the animal often stands on three legs. It is said that horses of sluggish or Lymphatic temperament are most liable to the disease, thus it is common with draft horses, especially after some sudden change in work or habits; it is often called Monday Morning Disease, because attacks are common after the rest day Sunday. It used to be thought due to over-feeding, but modern

veterinary medicine treats it rather as a local affection. If neglected the lymphatic glands up in the groin may develop suppuration, and the horse then dies of blood poison. A number of attacks leave the leg permanently swollen, and the condition is then called Chronic Weed.

Treatment Rest the animal and apply hot fomentations to the leg, using water hot as the hand can bear, then rub in freely Conkey's Pain Lotion and bandage with a woollen cloth. Do this every few hours; or if you keep up the hot fomentation one hour at a time, then bandage with Conkey's Pain Lotion, treatment three times a day will be sufficient. Meanwhile give the horse a mild physic and put on regular sick diet, (mashes, green fodder, etc.) and avoid giving any grain. Mix with the feed Conkey's Stock Tonic according to directions. With this treatment it will be unnecessary to bleed the animal, which is often extremely risky business. For a chronic, obstinate case of stocking we advise a flannel bandage (cut bias) put on over oakum padding every night, with night and morning treatment, bathing the leg in hot and cold water, alternating. Then massage with Conkey's Pain Lotion. A little walking exercise will benefit.

MALLENDERS AND SALLENDERS This is a scaly condition of the skin known as Mallenders when the back of the knee is affected, and Sallenders when the skin on the hocks is affected.

Treatment is both local and internal as follows: Apply Conkey's Nox-i-cide Dip and Disinfectant solution, two teaspoonfuls in a pint of warm water; or smear the part with Conkey's Healing Powder 1 part to 3 parts lard, made up into an ointment. Then put the horse on laxative feed and avoid overfeeding. Mix Conkey's Stock Tonic with the feed to keep the system open or use the regular home-made stock salt mixture made up from 9 parts common salt and 1 part Conkey's Stock Tonic. This medicated salt can be safely left in a dry place where the horse can help himself just as he needs it. He will then not overdose.

MAMMITIS This is inflammation of the udder. Treat by hot water applications twice a day and rubbing with Conkey's Pain Lotion. Strip away the milk often. Sometimes it is necessary to irrigate the udder with a 1 per cent boric solution, used luke warm. To reduce fever, give Conkey's Laxative Tonic; or give daily $\frac{1}{2}$ oz. saltpeter to aid in reducing fever.

MANGE The horse is constantly rubbing and scratching, so that the skin becomes inflamed and sore in patches and the hair falls out. This trouble is due to the mange mite.

Treatment Separate the affected animal or animals and thoroughly clean up and disinfect the quarters with Conkey's Nox-i-cide Dip and Disinfectant according to directions. Thoroughly clean all halters, head-pieces, blankets, etc., and burn any straw or bedding that may carry the infection. Treat the mangy horse with a thorough rubbing with Conkey's Nox-i-cide Dip and Disinfectant, 2 tablespoonfuls to 1 quart of water. Repeat every three days until the trouble is entirely cured. Compare also treatment under Eczema, Itch, etc.

MARES DYING AT TIME OF FOALING

Preventive treatment: Keep the breeding mare at steady light work right up to the time of foaling, but under no circumstances overwork her or abuse her with harsh treatment of any sort. Do not feed too much

coarse bulky feed but give her the best hay, and a nice grain and bran ration, throughout the whole period of gestation. Keep the system open by occasional tonic treatment with Conkey's Stock Tonic mixed with the regular feed, or use the veterinary salt already urged, made up of 9 parts common barrel salt and 1 part Conkey's Stock Tonic, mixed thoroughly and left where she can help herself anytime. Examine all hay carefully and feed none that is moldy or musty. Occasional doses of Conkey's Horse Tonic in the later months will be very beneficial, and this same Horse Tonic is excellent for bringing the mare back to normal condition after foaling.

Losing mares and colts is expensive business. Usually it is entirely preventable by proper management, and the few suggestions given above cover the main points to be considered.

MENINGITIS (SPINAL)

This is sometimes confused with Azoturia or stiffness in the muscles or legs, muscular spasm, etc., with loss of sensation. Often there is paralysis in whole or part,

affecting the throat. If the horse is not able to swallow, treatment is hopeless. Treatment in general is cold applications to the spine in the lumbar region, or in severe cases a counter irritant, such as mustard plaster or strong blister. For this we advise Conkey's Blister, rubbed over the spine lightly as directed on packages. The paralyzed muscles will need a stimulating liniment, such as Conkey's Warming Liniment, which every stock-owner should keep on hand.

If there is much paralysis it will be necessary to get the horse off its feet into a sling, and the bowels and bladder will have to be emptied regularly by enema and catheter, but at this serious stage the case would undoubtedly be in the hands of a veterinarian. When the acute symptoms lessen give the horse a tonic stimulant such as Conkey's Horse Tonic, which can be mixed with water as a drench, or given with a syringe.

MILK FLOW— HOW TO STOP IT

Dry off the mare by cutting off all corn, all grazing, limiting the amount of drinking water, and keeping her on hay only. Each day strip away part of the milk and rub the bag with camphorated oil.

MOON BLINDNESS

Discussed under Blindness, which read. Note that Moon Blindness (Periodic Ophthalmia) can be prevented in its early stages but in later stages is incurable.

MOUTH SORES

Examine the mouth frequently to see if any teeth need attention, also to see if the bit is comfortable. If any sore patches are found treat these with Conkey's Healing Powder, lightly dusted on, or use Conkey's Nox-i-cide Dip and Disinfectant solution, $\frac{1}{2}$ teaspoonful to a cup of water and wash out the mouth with a soft cloth. In this strength the solution is excellent antiseptic treatment and if a little of it should be swallowed will prove beneficial rather than otherwise.

NASAL GLEET

The symptom is a mucous discharge from the nostril. Compare under Colds, Catarrh, Distemper, etc. If the discharge is from one nostril only, look carefully for a diseased upper molar, as this may be the cause of the trouble. Note symptoms of Glanders and

be sure the case is only Nasal Gleet and not a case of Glanders. General directions for Nasal Gleet are as follows.

Treatment Spray the nostrils with Conkey's Pain Lotion, using an atomizer, or apply with a small sponge or cotton ball stuffed up the nostril. Rub the Pain Lotion all over the outside, clear up to the eyes. Give the horse Conkey's Stock Tonic in the feed, which will act as a tonic and conditioner. Grooming and other extra care at this time will pay, helping the animal to get quickly back to good normal condition.

NAVEL AND JOINT DISEASE

This disease is due to infection of the navel at birth, or before the part is thoroughly healed. It is absolutely preventable by proper precautions at the time of the mare's foaling. The symptoms are soreness and inflammation at the navel, swelling of the joints, and lameness. Often the symptoms are mistaken for those of accident, the owner supposing the colt has been kicked by the mare and thus injured.

Treatment is preventive. Provide a thoroughly clean place for the mare for foaling, having it thoroughly disinfected with Conkey's Nox-i-cide Dip and Disinfectant. If possible to whitewash the quarters this is advised. Have a solution of Nox-i-cide Dip and Disinfectant, two teaspoonfuls in a pint of water, ready to use with plenty of small pieces of clean cheesecloth or muslin, soaked in the same strength solution. When one of these is used for sponging off it should be thrown away in a pile to be burned later, and not saved for a second using.

At birth of the foal, immediately wet the stump of the cord with a solution of Conkey's Nox-i-cide Dip and Disinfectant, 4 teaspoonfuls to a pint of water. Repeat this application two or three times a day, dusting with Conkey's Healing Powder until the cord is shriveled up and the place is entirely healed. A standing attitude makes foaling easier for the mare, and in this position the cord is broken naturally and there is less liability of hemorrhage. However, if the mare is lying down and does not rise up after foaling and thus break the cord, it will have to be cut: first tie the cord 2 inches from the body with a piece of tape soaked in the Nox-i-cide solution, and then cut it a few inches from this ligature, say about four inches from the body. Treat the stump as described above and keep up treatment several times a day until the stump dries and shrivels off.

This solution, or one similar to it, should be used on the raw navel of every animal born under domesticated conditions. This one simple precaution will save thousands and thousands of valuable colts, calves, etc., every year. This is not too much trouble to insure the young animal from navel infection. A live colt or calf is better than a dead one, and there is a strong chance of the owner having a dead one on his hands before long when such simple, safe precautionary measures as the above are neglected.

Before the colt sucks, sponge off the udder of the mare and her hinder parts with Conkey's Nox-i-cide Dip and Disinfectant solution, 2 teaspoonfuls in a pint of water. Twice a day for ten days wash the udder with this solution and your colt will probably come through without the common troubles with scours, etc.

Even mares foaling on clean grass should have attention as suggested above, and in every case the navel should be treated and the mare's udder and quarters should be washed with the antiseptic solution of Nox-i-cide.

PIN WORMS

Inject into the rectum three nights a week $\frac{1}{2}$ gallon of Conkey's Nox-i-cide Dip and Disinfectant solution, using one-half gallon warm water and 2 teaspoonfuls Nox-i-cide Dip and Disin-

fectant. Use an ordinary hose and funnel. This will get rid of the worms in the rectum, but as the horse will probably have other stomach and intestinal parasites, treat with Conkey's Worm Remedy.

PINK EYE Compare treatment under Influenza, Pinkeye, Distemper or Strangles.

PNEUMONIA OR LUNG FEVER Neglected colds easily run into pneumonia. There is high fever, difficult breathing, short, painful cough, and the eyes are highly injected (the blood-vessels standing out prominently on the eye-ball, and changing from red to a purple-gray color). The animal stands in a listless manner, with countenance distressed. When the ear is placed to the chest a dry-rubbing sound is heard.

Treatment Put the sick horse in comfortable quarters, if possible a box stall. Have plenty of fresh air but no draft, and blanket if the weather is at all cold. There will be little appetite, but put the animal on such sick diet as mashies, cooked roots, moistened hay, etc., mixing Conkey's Stock Tonic with the feed as directed. The animal's strength must be kept up and the Stock Tonic will increase the appetite, in addition to having tonic effect. It will also insure digestion of the food taken, and will keep the system open. If the animal will not eat, give eggs and milk to tempt the appetite. Rub the throat and chest with Conkey's Pain Lotion. Rub the legs until they are warm, using Conkey's Warming Liniment, rubbing in a little dry mustard to produce warmth, then bandage over with woolen bandages. These will need to be taken off once or twice a day and the legs hand-rubbed before replacing them. Do not rub the chest with powerful blisters, but if hot applications are needed you can use mustard paste, putting it on the chest and also around back of the shoulder blades and down to the middle of the body, below the chest. Go lightly over the thin skin back of the elbow. Wash this paste off in half an hour. Keep the horse blanketed. Inhalation treatment with a pail of steaming water, or a nose bag, will be useful. You can use Conkey's Pain Lotion, Conkey's Pi-no or Conkey's Nox-i-cide Dip and Disinfectant for steaming the nostrils, all of which are powerful disinfectants and germicides. Directions for use of each on the package.

POLL EVIL This is a painful swelling on top of the head, i. e., the poll, which may come from a blow or bruise from low doorways, or from beams which the horse strikes when tossing its head, or from pressure of tight over-drawn checks. Poll evil is in reality an abscess on the top of the head, and is liable to be serious because of its location at a high point, since the abscess will tend to deepen and burrow, and also because of the important bloodvessels at that part which may be injured in ordinary treatment.

Treatment Poll Evil is easy to cure if treated when it first appears, about all that is necessary being to give hot or cold applications to prevent the formation of pus, using a solution of Nox-i-cide Dip and Disinfectant (1 tablespoonful to 1 quart of hot or cold water). The horse should be watched as to diet, and limited to laxative, non-heating feeds.

However, most cases are not treated until the swelling has spread and pus is formed and commencing to burrow. The longer neglected, the deeper the abscess works, getting down beneath the muscles, in time affecting the bones. To treat, get Conkey's Poll Evil Remedy. Make two openings in the swelling, one at the bottom to drain out the pus, the other at

the top for medication. These must both be kept open, and not allowed to scab over; and the abscess must be kept moist, so that it will heal slowly, from the bottom out. The abscess will have to be probed to the bottom and all loose tissue cleaned out, working gently, as directed on the package of Conkey's Poll Evil Remedy. Follow directions for washing out the abscess with the antiseptic solution, then dress with the Poll Evil Remedy, repeating the operation each day, alternating with the special preparations included in the package as directed. This treatment heals perfectly and without the cruel blistering and cutting so often thought necessary. With Conkey's Poll Evil Treatment there is so little pain that the horse in most cases will stand quietly eating its grain, apples or similar tempting food, without interfering in any way with the operation. With a very nervous animal it may be necessary to use the lip twitch, however.

PROUD FLESH Apply Conkey's Healing Powder three times a day.

QUARTER CRACK Quarter Crack is a narrow fissure in the horn of the hoof, usually on the inside quarter of a fore foot. It is the same as a sand-crack, and differs from a toe-crack simply in being located in the quarter. It is caused by drying of the hoof, and alternate changes from wet to dry conditions. Hard, dry floors will cause it if proper attention is not given to dressing the hoof regularly with a good dressing (Conkey's Hoof Remedy). The fissure usually commences at the coronary band and grows deeper and longer if neglected.

Treatment Wash the hoof clean and examine it carefully for pebbles, nail, etc. Apply Conkey's Hoof Remedy with a brush, well up around the coronary band and over the heel. Treat every second day. Conkey's Absorbent applied to the coronary band, rubbed lightly to act as a blister, will stimulate the growth of healthy horn, but the Hoof Remedy should be applied over all the hoof, every second day, as suggested. If the fissure has been neglected so that the quarter is badly cracked, clamp the edges of the crack together, first cleaning out the crack (Nox-i-cide solution will disinfect and clean it thoroughly); then paint the edge with Conkey's Hoof Remedy. These clamps will keep the edges of the crack fixed and immovable and the healthy growth of new horn excited by the Hoof Remedy and Absorbent treatment will fill in the crack completely.

QUIDDING Have a dentist examine the horse's mouth for a diseased, split or sharp molar tooth and treat if necessary. While the mouth is sore, put the horse on soft feed and give Conkey's Stock Tonic to guard against indigestion from poor chewing.

QUITTOR This is a swelling around the coronary band, with intense heat and pain, and pus formation. It is really an abscess of the foot (see Abscess), due to some outside injury, such as a bruise, sharp nail prick, gravel in the foot or neglected corn.

Treatment Poultice with linseed to bring the swelling to a head if the abscess has not opened. Drain out the pus, remove dead tissue and clean out the opening with Nox-i-cide solution, 2 teaspoonfuls Conkey's Nox-i-cide Dip and Disinfectant in a pint of soft water. Plug with oakum saturated in the same strength solution; or you can use Conkey's Pain Lotion. The important thing is to drain out all the pus and keep the cavity antiseptically dressed. Be sure not to injure the coronary band when draining and removing dead tissue as it supplies the horny growth.

RHEUMATISM Caused by exposure to cold and damp, or by certain poisons in the system. The symptoms are stiffness and painful movement, with lameness shifting from one joint or leg to another. The joints are tender and swollen and the muscle affected is hard and tense.

Treatment Rub freely with Conkey's Pain Lotion and rest the part thoroughly, if necessary putting the horse in a sling. Give a physic to carry off any systemic poison. Put the horse on soft food, with green food once a day, and bran mash at least twice a week. Mix with the food Conkey's Stock Tonic in amount directed on packages. For medicine give three times a day $\frac{1}{2}$ ounce sodium salicylate in solution. Keep up a thorough rubbing with Conkey's Pain Lotion and apply hot flannel bandages between treatment. If in the region of the loins a good way to apply the necessary heat is by covering the part with a thick pad of flannel or a blanket, and ironing with a fairly hot iron, or use hot salt bags.

RINGBONE This is a bony ring or enlargement on the coronet, a deposit from the pastern bone due to inflammation at the articular surface. If the deposit is from the upper surface of the pastern bone, namely the pastern joint, it is called high ringbone; if from the lower articular surface (affecting the coffin joint) it is called low ringbone. Ringbone usually comes from faulty conformation or from wrong shoeing which throws the whole action out, making the horse liable to injury from hard work or fast driving. In early stages frequent rubbing with Conkey's Pain Lotion will take out all lameness. If well advanced use Conkey's Absorbent, which absorbs the deposit without the pain of a blister and leaves no unsightly sore to be healed up later. A bad case will require complete rest during treatment. Full directions for use of Conkey's Absorbent for treating Ringbone come with the package.

Ringbone

Bones of the foot
(After Chauveau)

RINGWORM This is an itching skin disease due to parasite (trycho-phyto tonsurans) which causes the hair to fall out in ring after ring, leaving circular patches of bare skin, of a scurfy, stubby appearance and constantly enlarging.

Treatment Wash the part thoroughly, then apply Conkey's Nox-i-cide Dip and Disinfectant as directed on packages.

ROARING—THICK WIND—WHISTLING This is a noisy difficulty of breathing after exertion and is due to paralysis of the muscles of one side of the larynx, or to a thickening of the larynx membrane. It is considered incurable but symptoms may be lessened by the operation called tracheotomy. Consult a good veterinarian. Frequently it results from neglected Distemper, for which see treatment

with Conkey's Fever Remedy (under Influenza, Pinkeye, Distemper or Strangles).

Treatment is not successful except in early stages, when we advise for Roaring Conkey's Horse Tonic once a day, and for external treatment applications of Conkey's Absorbent, painted over the throat from ear to ear, repeated according to directions until four applications have been made. Do not feed any clover hay or any musty, badly cured fodder.

SCALDS Burns or scalds from hot water are usually inexcusable and due to cruel carelessness in giving hot water applications. Treat with Conkey's Nox-i-cide Dip and Disinfectant solution, 1 teaspoonful to 1 pint of warm water, to draw out the smart and sting, then apply immediately Conkey's Pain Lotion. Dust the part thickly with flour or starch and cover with cotton wool.

SCRATCHES This is a diseased, inflamed condition of the skin of the fetlock. It is similar to Cracked Heel, and if neglected will run into Grease Heel for which see special treatments. It may be due to blood condition, and is very common in spring, but often follows neglect to clean off mud and dirt after the horse has been working in sloppy weather.

Treatment For the general condition put the horse on Stock Tonic mixed with the feed as directed. For external treatment, clean the part carefully with a brush. If necessary to use water for cleansing, put a few drops of Conkey's Nox-i-cide Dip and Disinfectant in a cup of warm water, and after sponging, dry the skin carefully. Then proceed as follows: Poultice with Conkey's Hoof Remedy mixed with bran and continue poulticing several days if necessary to reduce the heat and inflammation. Then clean the part with Nox-i-cide solution (1 teaspoonful Conkey's Nox-i-cide Dip and Disinfectant to a pint of warm water), dry thoroughly with a soft cloth then dust on Conkey's Healing Powder. This will heal quickly. Meanwhile keep up the Stock Tonic Treatment for one month, to put the horse in good healthy condition.

SEEDY TOE This is a condition of the hoof in which there is a powder-filled cavity between the two layers of horn of the hoof, sometimes extending from the sole to the coronet. The trouble is due to a horn parasite and responds to the following:

Treatment Cut away enough horn to expose the cavity, then fill with Conkey's Hoof Remedy. Use the Hoof Remedy for regular dressing of the hoofs and this condition will be prevented entirely.

SHEATH Washing the sheath every 2 or 3 weeks with Conkey's Nox-i-cide Dip and Disinfectant solution, 1 teaspoonful to 1 pint of warm water, will correct any tendency to diseased condition and entirely prevent what is known as foul sheath. Do not use harsh soap in the water. Nox-i-cide Dip and Disinfectant will clean the part perfectly and quickly and beside will act as an antiseptic application. Do not use lard, vaseline or any greasy mixture of any kind, for grease is a culture bed for dangerous germs. Antiseptic cleansing is the safe and practically the only treatment.

SHIPPING FEVER Horses which have been shipped are very liable to fever. Put them on laxative feed and treat with Conkey's Fever Remedy, following general directions as given under Dis-temper. Conkey's Stock Tonic with the feed will be very useful just at this time to put the horse into fine general condition.

SHOULDER SLIP

Apply Conkey's Pain Lotion, rubbing it in freely.

SIDEBONES This is the name for the hardening of the cartilages of the foot on each side of the bone of the foot (the coffinbone) due to an earthy or bony deposit in the structure of the cartilage. That is, it is an ossification of those flexible cartilage pieces which in the natural foot allow the soft structures of the foot to expand when it strikes the ground (and conversely when the foot is raised from the ground). This hardening reduces elasticity, causes defective action, and in time lameness.

Sidebones
(After Stonehenge)

Treatment Firing is useless for this disease although commonly resorted to. Soon as any lameness or heat is detected apply Conkey's Pain Lotion freely, to take out the inflammation. If necessary keep this up a day or so; then apply Conkey's Absorbent, as directed on packages. If necessary to send for these Conkey remedies, you can use the time to advantage by treating with cold water bandages, or simply soaking the feet in cold water frequently. This will ease the pain, and will also pave the way for Conkey treatment. The cold water may in fact relieve the horse so that he will seem "cured," but the symptoms will return as soon as he is put to work again if the treatment is not given also.

SKIN DISEASE

For any skin affection use Conkey's Nox-i-cide Dip and Disinfectant mixed with water as directed. Read treatment for Eczema, Mange, Itch, Ringworm.

SORE EYES Spray with Conkey's Eye Remedy as directed on packages. Read treatment under Eyes, also under Blindness.

SORE MOUTH Treat all cases of sore or tender mouth with Conkey's Healing Powder, dusted on lightly with a ball of cotton batting.

SORES Whether simple or serious, treat all sores with some antiseptic soon as discovered. Keep Conkey's Nox-i-cide Dip and Disinfectant handy for this purpose. This will prevent serious developments. If sore is bad, dust with Conkey's Healing Powder which will heal quickly; if a deep sore, use Conkey's Pain Lotion, which will keep the tissue soft and heal from the inside first. If a very deep-seated sore, or a pus cavity, thoroughly clean first with Nox-i-cide solution as directed; if of the nature of an abscess, use Conkey's Poll Evil Remedy.

SPAVIN

Bog Spavin and Blood Spavin, have already been treated. We here consider Bone Spavin, which is a bony deposit in front and on the side of the hock, due to inflammation, which tends to unite and stiffen the movable joint. If neglected, this deposit or growth does reunite the parts of the joint and it becomes one bone substance. Hence the great difficulty in treating Bone Spavin when it has been neglected. The trouble is due in the first place to inflammation in the part from some accident or over-exertion, in animals with some fault in conformation, which makes them liable to strain the

Sound hock

Spavined

Cured spavin

part and thus bring on inflammation.

Symptoms

Hard bony swellings on front and inner side of the hock, lameness when the horse first starts to work, with wearing of the toe. In hidden or "occult spavin" the bony deposit is on the inner and lower part of the hock.

Treatment

is the same in all cases. Take out the inflammation of the joint with Conkey's Pain Lotion. Put on a high-heeled shoe to correct the faulty foot axis, then apply Conkey's Absorbent according to directions. Do not blister any ordinary case as Conkey's Absorbent will work in the majority of cases without blistering to the extent of taking the hair off or leaving a scar. In very old cases it may be necessary to apply Conkey's Blister which should be well rubbed in.

SOUND

DIFFUSE SPLINT

SIMPLE SPLINT

SIMPLE SPLINT

SPLINT This is a common affection of horses, being a small bony deposit on the cannon bone, usually of a foreleg, and showing as a distinct swelling on the leg, between the knee (or the hock) and the fetlock. Horses of certain conformation are very liable to Splint, hence it is sometimes called an hereditary disease. Often it comes from overwork when young. Lack of lime salts in the feed may cause it.

Symptoms

are the nut-like tumors described, usually not painful but always unsightly and always making the horse liable to sudden lameness at any time. When the splint is situated halfway between the knee and the fetlock the horse usually works out of it on being exercised, but when near the knee-joint, which is more common, or where it interferes with a tendon or joint, the lameness increases with exercise or "warming up."

Treatment

Apply Conkey's Absorbent according to directions.

SPRAINS Apply Conkey's Pain Lotion, rubbing the part freely. This treatment should be kept up until all heat disappears. If the pain does not also disappear, then change at this point to Conkey's Absorbent, which will be effective. Do not apply the Absorbent until you have all heat from the part. The horse must be allowed perfect rest. Keep the system open by giving laxative feed, or mix Conkey's Stock Tonic with the regular feed to insure proper digestion.

STAGGERS Frequently the cause is overfeeding and indigestion. Give a brisk physic, then correct the trouble by limiting the ration and mixing Conkey's Stock Tonic with the feed according to directions.

STOCKING See treatment for Lymphangitis, Weed.

STRANGLES See treatment for Distemper, Pink Eye, Strangles, Influenza.

STRINGHALT A form of Chorea, which see.

STUMBLING Examine the feet to see if the fault is with the shoes, or if the hoofs need shaping up. Give exercise to keep the hoofs in even development. Apply Conkey's Hoof Remedy as directed, to keep the hoofs in healthful, pliable condition.

Stumbling is sometimes due to worms (see page 114). Another common cause is bad eyesight.

SUNSTROKE In hot weather a horse should be allowed water frequently as wanted; and the head should be protected when the animal is worked out in the sun. Sunstroke produces a congestion of the brain, and the horse will stop, stagger, then fall to the ground unconscious. Temperature will run very high.

Treatment Get off the harness quickly and prop the animal in a comfortable position in the shade, on his brisket. Apply cold water to the head, or if possible use a bag of ice; but keep the head cool and sponge or spray the whole body with cold water. If able to drink let the horse take a few swallows of cool but not cold water at frequent intervals. Give a stimulant of 4 ounces of whisky in a little cold water. As the horse gets better keep up some sort of tonic treatment, preferably the use of Conkey's Horse Tonic in the dose directed on packages, or use Conkey's Stock Tonic mixed in the feed as directed.

Prevention A horse in good condition does not easily fall a victim of sunstroke. Keep the bowels and kidneys acting freely by the use of Conkey's Stock Tonic in the feed during hot weather, feed lightly and exercise regularly and you need have no fear of sunstroke.

SWEENY This is a wasting, shrinking, literally a starving of the muscles, especially shoulder muscles, due to injury to the point of the shoulder from a tight collar, or from hard pulling, especially when the horse is not in condition for the strain. There is a distinct depression over the shoulder blade, sometimes lameness, and stumbling.

Treatment A little exercise is good for the horse but do not work him for a time. Fill out the wasted muscle by daily hand rubbing with Conkey's Pain Lotion, rubbed in well, trying all the time to loosen up the skin. After one week change the treatment to Conkey's Absorbent, applied according to directions. Then return to the Pain Lotion. If necessary, repeat the Absorbent treatment. This treatment is very successful.

TEETH Have the teeth examined once a year at least. If there are any sharp, uneven molar teeth, they should be smoothed by filing the outer edge of the upper teeth and the inside of lower teeth. If a tooth is decayed have it pulled out. The condition of the teeth affects the whole general health. The teeth must do their part in masticating properly as the first process in digestion.

THIN FLESH General unthrifty condition calls for Conkey's Stock Tonic in the regular feed as directed. This insures full digestion of the ration given, tones the organs to full performance of their respective functions and increases the contractile power of the walls of the bloodvessels, thus increasing circulation. After a few weeks omit the Stock Tonic in the feed but keep before the animal all the time a veterinary salt made up as follows: 9 parts common barrel salt, 1 part Conkey's Stock Tonic, mixed thoroughly and kept dry. With this treatment, unless afflicted with some fatal wasting disease, the horse will flesh up nicely and keep in fine condition. Feed the horse according to the work he has to do. Read carefully the section on rations for horses.

THOROUGHPIN This is a common but not serious trouble—it is more a blemish than an ailment. There is a distension or puffing of the upper and back part of the hock as a result of some injury to the hock bone, causing an excess of synovial fluid in the bursal sacs of the hock. This distension passes clear through the hock, hence the name Thoroughpin. It is soft and fluctuating, that is when the puff or swelling is pressed on one side of the hock the liquid contents of the puff are forced through the hock and bulge out on the opposite side. This trouble is most likely to affect young horses with upright hocks.

Symptoms There is no inflammation, no lameness, or only rarely, when the horse has been much overexercised.

Treatment In early stages alternate application of hot and cold water bandages will reduce the swelling. Ordinary blisters will reduce it somewhat, but the logical remedy is Conkey's Absorbent. Follow directions carefully and in bad cases repeat every two or three days.

THROAT SORENESS Never neglect this symptom for it may run into a dangerous disease, hard and expensive to cure, sometimes incurable. Best treatment is spraying with Conkey's Pain Lotion, and also rubbing the throat outside from ear to ear with Warming Liniment. Spray and steam with Conkey's Pain Lotion or Conkey's Pi-no, used as an inhalant, as described in Bronchitis. To every gallon of water the horse will drink add 2 drams potassium chlorate. The usual hygienic rules should be followed as to food, ventilation and attention to the bowels.

THRUSH IN CLEFTS OF FEET This is an offensive diseased condition of the cleft of the foot-pad or frog, with foul discharge of pus and more or less destruction of the horn substance. It is usually due to bad stable management—in fact, is generally considered a sign of neglect, as standing in dirty, wet or overheated stables will cause it. It is unknown in clean stables where Conkey's Nox-i-cide Dip and Disinfectant is used as directed, all manure removed, the urine drained away, and the feet regularly cleaned of foreign substances. The hind feet of mares, and the fore feet of horses are most commonly affected. We do not mean to assert that thrush is always due to uncleanness, but it certainly is in the majority of cases. Other causes may be working on rough ground, change from dry to wet conditions, muddy streets, scratches, navicular disease, or contracted feet.

Treatment Clean up the stables. Then clean the feet of the horse and stand the animal in a tub of disinfectant solution, using Conkey's Nox-i-cide Dip and Disinfectant, mixed with water according to directions. Let the feet soak in this for half an hour, then pack with Conkey's Healing Powder and stuff cotton or tow into the frog. Repeat this dressing every three days and it will cure the case nicely. Conkey's Nox-i-cide Dip and Disinfectant mixed with bran also makes a good hoof pack and will cure Thrush, but this treatment should be given daily.

TUMORS These hard swellings or lumps have various causes. Most cases can be removed with Conkey's Absorbent, applied as directed. If, however, the tumor remains hard it should be cut out by a veterinary surgeon. Tumors can be burned out (with caustic or firing iron) but on the whole this is not so good practice as to have the veterinarian cut them out.

WARTS These are really little tumors, immediately under or in the skin, but usually not attached to the underlying structure, hence they can often be pinched off with the thumb and finger; cut off; or strangulated with a cord tied tight around the base and allowed to stay on until the wart sloughs off; but in this case it is necessary to apply a little chloride of antimony every two days until the base is a little lower than the other skin surface, then treat with zinc ointment every two days, or better yet, Conkey's Healing Powder. It is claimed by good authorities that cold pressed castor oil applied daily will drive them away. We have no scientific explanation as to this, but in practice it seems to work very well for certain kinds of warts, especially if the wart is not large and has a broad base. Our own treatment is to simply touch the top of the wart with Conkey's Nox-i-cide Dip and Disinfectant full strength, three times a day for a few days, when the warts disappear.

WINDGALLS— These are puffy
WIND PUFFS enlargements on the inside or outside of the fetlock joint, usually on a hind leg. A Windgall is really a dropsical condition of the bursae, or the tendon of the joint. The condition does not always need treatment as there is no discomfort or interference with usefulness. Old windgalls sometimes cause stiffness, however. The best treatment is rest, cold water bandages for a few days, or free rubbing with Conkey's Pain Lotion, then application of Conkey's Absorbent according to directions.

WIRE CUTS These are very common and sometimes very serious. Get rid of barbed

wire as rapidly as possible as its use is dangerous. Keep on hand Conkey's Nox-i-cide Dip and Disinfectant, Conkey's Pain Lotion and Conkey's Healing Powder and use according to the nature of the cut as described under Wounds. The first necessity is antiseptic treatment to prevent infection. Often this is all that is necessary, but never neglect any open cut on an

1—Splint
2, 3—Enlargements
from injury

Windgall
and
splint

Cured
splint

animal's body. Use what you have on hand, for delay is dangerous. But prepare for emergencies by having on hand the above three indispensables for first aid to the injured.

WORMS The horse is a host for many parasites of the stomach and intestines, which enter the body along with impure food and water or while grazing on undrained or marshy pasture. Of these the Large Round Worms in the small intestine and the Small Threadworms in the large intestine and rectum give most trouble. Besides these there are three species of tape-worm found in the intestines, sometimes reaching as much as 20 to 30 feet in length. Worms are always unprofitable for the livestock owner. They often cause very serious disorders, and in every case are a drain on the vitality of the animal. It is always expensive to feed worms.

Symptoms General unthrifty condition; dysentery; colicky pains; appetite depraved; rubbing the tail or mane; pouting of the anus, itching rectum and frequent signs of the parasites in the manure discharge are common symptoms. Lifting the upper lip is also considered a symptom. Usually there is a ravenous appetite, a pot-belly, but the animal fails to thrive in spite of the best feed and general good care. How can it thrive? The length of the small intestine is about 60 feet, the large intestine 30 feet more. The embryos taken in through the mouth develop rapidly, reproduce themselves, and soon the whole length of the bowel is crowded with blood sucking parasites. It is absolutely necessary to get rid of the worms.

Intestinal worms of the horse

Treatment If the condition has been neglected to the point of the above symptoms, it will be necessary to give active vermicide treatment at once, using Conkey's Worm Remedy. Then put the horse on regular Stock Tonic treatment, using $\frac{1}{2}$ tablespoonful with the regular feed twice a day. The horse will pick up rapidly for Stock Tonic increases the appetite for the ration, insures full digestion of the food taken, tones up the body organs and acts directly on the blood vessels, thus increasing circulation.

Prevention Here again prevention is easiest and cheapest. Do not let the worms get a good start, but use a home-made medicated stock salt all the time and let each animal treat itself. The best stock salt as well as the cheapest, is easily made from 90 pounds of common barrel salt and 10 pounds of Conkey's Stock Tonic. Mix this thoroughly and keep in a dry place where the horse can help himself.

YEAST TREATMENT This is a successful, popular treatment for sterility, leucorrhoea and Epizootic Abortion, and while familiar to most stockmen it is included here convenient for ready reference. Of course, where sterility is due to poor condition, or to some deformity, the yeast treatment would not benefit. Its success is due

to the fact that it corrects the unnatural acidity of the secretions, which is the common cause of failure to breed when the mare is otherwise healthy.

Mix to a paste with a little warm water one cake of compressed yeast and allow to stand in a moderately warm room for twelve hours; then add a pint of warm water and allow to stand as before; then strain through cheesecloth. The mixture will now be ready for use and should be injected in the vagina by means of a syringe or hose and funnel after flushing out the passage with warm water. Use when mare is seen to be in heat and have her bred when period of heat is about over. Try the same treatment for barren cows and sows.

Diagram showing Points of the Horse and location of common injuries and diseases.

A—Thoroughpin B—Curb C—Bog and Blood Spavin D—Bone Spavin E—Splint
F—Windgall G—Capped Elbow H—Poll Evil

1. Muzzle	8. Quarter	15. Pastern
2. Crest	9. Gaskin or lower thigh	16. Heel
3. Withers	10. Hock	17. Cannon
4. Loin	11. Stifle	18. Knee
5. Hip	12. Flank	19. Fore arm
6. Croup	13. Tendons	20. Shoulder
7. Thigh	14. Fetlock	21. Throat latch

CATTLE

I. The Dairy Herd

WHEN you come to the dairy you come to the highest principle of livestock farming.

In the dairy, most of all, you realize that raising livestock is a "manufacturing business," with dairy animals for machinery, improved, and unimproved, and feed for the raw material. Good sense, on the dairy farm as in the factory, is:

1. Securing the best raw material the cheapest way,
2. Selecting, caring for, mending, improving machinery,
3. Stopping unnecessary waste,
4. Getting the best market for products.

RAW MATERIAL

This whole subject is too big for subhead discussion. We will make many general statements in relation with other topics, but the details have been taken up carefully under the section Feed and Feeding.

THE COW "MACHINERY"

How is your dairy equipped with dairy machinery?

We don't mean have you a Babcock tester or a cream separator, or one of the new-fangled milking machines that make a cow think she's being renovated with a vacuum cleaner. Get down first of all to the cow. Is she improved or unimproved to begin with? if improved, is she a good specimen of her kind or breed, or do you keep her because of her high sounding lable? Or is she just a common ungraded scrub junk, full of loose bolts and screws, slow to work, wasteful of raw material, poor and uncertain as to final product? Or, if good to begin with, do you keep her "oiled" up in slick running order, considering the wear and tear on high grade machines when run with a high pressure motor for heavy factory output.

STOP THAT WASTE Stop that waste. Dairying is a business—not guesswork. All profit in dairying is based on knowledge of the individual cow.

As a business proposition the rule in dairying is to find out and get rid of the unprofitable cow.

"GONE AND DONE IT" Iowa has—just that! Iowa, the second largest dairy state (New York is first) has just found out by actual tests that her farmers have been patiently milking 500,000 unprofitable cows. This means that in labor alone there has been a useless expense of a year and a quarter's time for something like 10,000 men. Iowa's gone and done it sure! But it's pretty much the same over all this country. We just happen to pick up these figures from Iowa.

ALL WRONG It proves we were all wrong in what we said above; fact is, in most cases dairying is **guesswork**—not business. Might just as well make it pay. Pay or not, the dairy man can take his choice.

CHOOSING YOUR COWS To begin with, there are two items (shall we say just one item?)—a good **individual** from a good dairy breed. Breed isn't enough, for cows are in this respect like humans—it's the individual that counts.

Great strides in the betterment of the various breeds have been made by breeders and stock farmers of this country, starting with types already originated in other countries; chiefly in England, Scotland, Holland, and Switzerland, as shown by the names of present well known breeds. These they have developed or occasionally changed to meet special purposes. At first development was mainly with a view to beef, but with the passing of the old cattle king days and the coming of expensive feeding methods, we are bound to give more and more attention to the dairy types. It is proved that a pound of dry feed produces on the average a pound of milk; but it takes fully ten times that amount to produce a pound of beef; (and it is interesting to note that beef requires a third more in ration than a corresponding gain in mutton, and twice as much as a pound of pork). With our modern need for concentrating the industry, and for more economical feeding methods, we have a corresponding increase of attention to dairy cattle as representing the profitable industry.

THE SHOW RING TEST From the best known breeds select your kind, suiting your own taste and suiting also conditions of pasturage, roughage, etc., with which you have to deal. A good milk cow sells for as much as a good horse used to; and a good horse sells for as much as two of the kind did a few years ago. Prepare to pay for what you get. It is easy to find six cows that will yield as much as twelve average, untested cows would. Judge the cow you buy as would a judge in the show ring. Look for (1) dairy temperament, (2) feeding capacity, (3) constitution, (4) milk organs, (5) quality, (6) pelvic region.

THE DAIRY TYPE In general appearance dairy cattle are noticeably different from beef stock.

Instead of the blocky, rectangular outline, straight back and belly lines, look for the well marked "wedge-shape," with less thickness of body, narrower thighs and back, full and heavy behind, with ample udder. In judging for dairy conformation the udder counts 25 points. Fleshiness is

distinctly objectionable in the true dairy type. Narrow in the fore quarters but wide in the hind part, it is easy to understand how the dairy cow can produce as much as she does; with her great development in the lung and digestive regions, which account for the biggest part of the "wedge," we have a capital machine for turning grass into gold, i. e., good milk and butter.

Explanation—1, muzzle; 2, forehead; 3, neck; 4, withers; 5, back; 6, loins; 7, hip; 8, pelvic arch; 9, rump; 10, pinbone; 11, shoulder; 12, chest; 13, heart girth; 14, side; 15, belly; 16, flank; 17, milk well; 18, milk vein; 19, fore udder; 20, udder; 21, teats; 22, hind udder; 23, thigh.

A MILK MACHINE Long years of careful selection and breeding are back of this milk machine. Every effort has been made to improve the breeds along the lines of early maturity, length of milking period, amount and quality of milk, and to discourage a tendency to flesh. Thus from the natural animal, with a milking period extending only over the pasturage season, we have created one with an almost continual flow—6 or 7 quarts a day for 300 days being a good present average. This means about 4,000 lbs. milk yield annually, and many herds average 5,000 lbs. annually. Individual records are often very much higher; and it is common for a good dairy cow to give ten times her own weight in milk each year. Even a fairly good dairy cow today makes a butter yield equal to that of three average cows a few years ago.

IMPROVED DAIRY BREEDS At present only a small portion of actual dairy cows in the United States are pure breeds, being simple crosses of inferior stock with pure. There is plenty of room for improvement ahead. The case of Iowa, above alluded to, is not remarkable in the least, for dairy farmers all over the country are barely waking up to the advantages of purer stock and selected individual workers of the given breed. More and more we are realizing the need for the individual test; for it is possible to find a lazy, inefficient, and yet handsome, specimen of any breed. In no other business is the saying truer "that handsome is that handsome does." A good dairy cow today should give at least 5,000 lbs. of milk yearly; or on a butter basis, $\frac{3}{4}$ lb. per day. So when you set out to buy a cow, get one with patent insides and all the "wedge-shape" latest improvements.

Suit yourself as to breed, of course narrowing your choice down to those breeds that suit your purpose best. For butter fat select the Jersey, or the Guernsey, for instance; and for milk the Holstein. But every breed has its special points, which you should study carefully.

THE JERSEY Today, in point of popularity, the Jersey ranks first.

A sort of public sentiment has been built up about her dainty person, docile temper and good manners. Back of all her beauty is undeniable butter. Her tests of milk yield show the highest average of 5.61% butter-fat. Indeed, the breed was developed for butter production chiefly and in quantity of milk flow is outclassed by some others, especially

the Guernsey and Holstein. The Jersey is perhaps the purest of all breeds. No other has been so protected from crosses and infusion of less aristocratic blood. Early in the history of the type, breeders realized they must closely safeguard the fine points they had gained. In the island of Jersey, the breed's original home, laws were passed prohibiting the importing into the island of cattle from other lands, except as beef for immediate slaughter. The Jersey in the United States dates back to the first importation in 1853; and its popularity was quickly established. There has been a little objection to the Jersey cow on account of small size and general tendency to delicacy, making a little more care necessary in housing and management, but still her milk pail fills to the brim, and still her butter test holds its mark. And to look at her fine skin of soft cream color, or tawny white, sometimes with shades of red or steel gray, who could fail to give her all the praise enthusiastic breeders sing for their "Queen of Dairy Cows?"

To January 31, 1911, the tests of 780 Jersey cows for year's periods, authenticated by representatives of State Experiment Stations, have been accepted by the American Jersey Cattle Club. These tests average 7844 lbs. 7 oz. milk, 421 lbs. 3 oz. butter-fat, the average percentage of fat being 5.403.

A Fine Type of Jersey

Divided into eight classes according to age, the averages are as follows:

1. Cows under two years—Average, 6059 lbs. milk, 324 lbs. 14 oz. fat.
2. Cows two years and under two and one-half years—Average, 6847 lbs. 15 oz. milk, 349 lbs. 9 oz. fat.
3. Cows two and one-half years and under three years—Average, 7180 lbs. 2 oz. milk, 386 lbs. 14 oz. fat.
4. Cows three years and under three and one-half years—Average, 7311 lbs. 4 oz. milk 394 lbs. 2 oz. fat.
5. Cows three and one-half years and under four years—Average, 7630 lbs. milk, 408 lbs. 12 oz. fat.
6. Cows four years and under four and one-half years—Average, 7993 lbs. 14 oz. milk, 442 lbs. 8 oz. fat.

7. Cows four and one-half years and under five years—Average, 8753 lbs. 5 oz. milk, 469 lbs. 8 oz. fat.

8. Cows five years and over—Average, 9285 lbs. 3 oz. milk, 495 lbs. 3 oz. fat.

How does your Jersey compare?

THE HOLSTEIN In point of numbers recorded the Holstein leads and has for several years past. In actual milk flow the Holstein easily comes first, 40 to 60 lbs. daily being a common average, running 7,500 to 8,000 lbs. a year. In per cent. of butter-fat the Holstein ranks after all other breeds, practically in this order:

Jersey	5.61% butter-fat
Guernsey	5.12% butter-fat
Ayreshire	3.58% butter-fat
Shorthorn	3.47% butter-fat
Holstein	3.46% butter-fat

But in average total yield the Holstein holds the world's record, with Colanth 4th's Johanna's yield of 998.26 lbs. butter-fat.

Missouri Chief Josephine—A College Educated Cow who is making Holstein history

The Holstein is a large sized, short horned, lowland breed native to the low, fertile lands of Europe on the North Sea. Friesland, Holland, famous for its butter production, is the central home of the Holstein, which breed is often known as the Holstein-Friesland. From here some 10,000 head of foundation stock have been distributed through the farms all over America. As an all-round dairy type this breed, the result of two thousand years of conservative development in Friesland, is by some considered superior to any other breed, on account of:—

1. Size, strength and general vitality;
2. Capacity for full utilization of rough feed;
3. Large milk yield;
4. Prepotency when used to grade up scrubs;
5. Ready marketability of carcass for beef.

The high percent of solids and comparatively low butter-fat, cause many to urge Holstein milk as especially valuable as a perfect food for invalids or children, of good substance and easily digested.

The Holstein reaches full height at two and a half years, full breadth and maturity at five. In Holland it is never allowed to live beyond seven years, and is then fattened for market. Because it can thus be finished as beef the breed is exceedingly popular in the United States. Holstein calves are large at birth, grow rapidly and can be fattened quickly for veal. The breed is excellent for grading up scrubs. They make good use of some quite inferior feed stuffs and are noticeable for a general hardiness and vitality under various conditions. To reach their greatest usefulness, the Holstein, like all good cattle, must be grown right on from calf to finish and not allowed to get stunted.

CHEATING THE COW

"The stingy feeder cheats himself as well as the cow" is homely philosophy. If you have Holsteins, which are a large breed, provide plenty of "raw material" for your

factory product.

SOME HOLSTEIN TOP-LINERS

De Kol Creamelle, one of the Holstein champions, gave 26,684 pounds of milk in a year. In 1907 the World's champion butter cow, Colantha 4th's Johanna, gave 998 $\frac{1}{4}$ lbs. of butter-fat in 27,432 pounds of milk. A new record for the Holstein is Missouri Chief Josephine on the farm of the College of Agriculture in the University of Missouri. Her record for six months (1910) is 17,000.8 lbs. which is 1,458 lbs. better than the record of Colantha 4th's Johanna. Her year record is 26,825 lbs. of milk. Her butter test is 4.1 percent. She gives more milk in two months than most cows give in a year. She produces just about her own weight in milk every fortnight. It costs about 77 cents per day to fire her furnace with good wet feed, alfalfa and corn silage. But she earns over \$4.00 per day on this ration. She's only a dumb creature, but she is worth as much to the world as the average electrician or mechanic.

In color Holsteins are black and white—not mixed, but colors sharply defined, black spots on a white ground. In this new champion Josephine, white predominates, but head and neck are spotted, with a few dabs of black on sides and tail. Pure bred Holsteins have always pure white feet and white tassel on the tail.

De Kol, Queen La Polka 2nd, (Holstein) She gave 3,376 lbs. milk in 30 days.

THE GUERNSEY The Guernsey, formerly called the Alderney, is a close cousin to the Jersey and comes from the islands of Guernsey and Alderney, in that same group of English isles of which Jersey is the largest. The Guernsey resembles the Jersey in shape and form, though somewhat larger and coarser, and in color tending to yellowish, brownish, or reddish fawn, with white. Its hoofs are amber, and

a rich yellow secretion is a characteristic of the Guernsey, on which breeders lay stress in judging points. Yeksa Sunbeam, who made 14,920.80 lbs. milk yield at nine years old, is the Guernsey champion, with 5.75% butter-fat, a very high performance. There have been many high individual Guernsey records, though fewer official tests than for the Jersey or Holstein. A good average for butter-fat for this breed is 5.12%. The fat globules are very large, and of rich yellow color; which makes the Guernsey very popular for butter. Like the Jerseys, they are considered somewhat delicate, suited to the mild climate of their native isles. The temperament of both bulls and cows of this breed have been developed and handled on the Island in a manner that would indicate gentleness and quietude. This even temperament has been very conducive to the adaptability of the breed to the various climates and conditions of the world at large. The only hindrance to their widespread introduction has been the fact that for the last few years there have not been enough animals to supply the demand. At the present time they are largely on private estates and places where high-class dairy products are demanded, and few, if any, breeding Guernseys from the speculative standpoint.

The American Guernsey Herd Register requires of all cows entered that they must produce from two years old, or before, not less than 6,000 lbs. of milk, and this is scaled up to a minimum of 10,000 lbs. of milk for cows five years old and over. The butter-fat record for the year must have a minimum of 250.5 lbs. at 2 years old, and at 5 years a minimum of 350 lbs. The American Guernsey Cattle Club was organized in 1877. It has published 21 volumes of the Herd Register and has recorded, up to March 6, 1911, 18,722 males and 34,758 females, a total of 53,480.

The Guernsey breed was the first to establish an Advance Register of the basis of yearly production of butter-fat. At present the highest milk record is 18,458.80 lbs., and several cows have made butter-fat equivalent to more than 1,000 lbs. of butter in a year. The average for 1,200 records is 8,074.28 lbs. milk; 410.44 lbs. butter-fat.

How do your Guernseys compare?

THE AYRESHIRE Ayreshires, from the country of Ayr, southwest Scotland, may well be considered next. Though not yet so popular as the Jersey, Holstein and Guernsey, the Ayreshire is rapidly growing in popular favor. This is the youngest of the thoroughbred dairy breeds. The average milk yield stands up well in comparison with all other dairy breeds; but there are no sensational individual performances, although of late the Ayreshire has materially advanced in individual yield, both of milk and butter. The Ayreshire is a mixed breed: In color it includes red, brown and white, sometimes combining all three colors, and easily reverts to white, which was the color of the native, wild original. Perhaps the most favored color is dark red, with about one third pure white in splashes, and face white clear down over the mouth. One thing about the Ayreshire is its general excellence, as distinct from spectacular individual performances. The udder development is good, extending well up behind and coming far forward. In the Pan-American test (1901) the five Ayreshires ranked second, right next to the Holstein, in milk production, though lower (4th place) in butter test. Ayreshires are rough, rugged, good practical animals, bearing up well under rather hard conditions. In fact, in England, they have been called the poor man's cow. They certainly are **producing** cows and the general average is high. There is always good net profit in an Ayreshire herd.

The Ayreshire is early maturing. While distinctly wedge-shaped, they tend to flesh more than the more refined dairy breeds and dress out a good percent when wanted by the butcher, being heavy in the best paying parts. They are "grand, big cows" say the breeders; with good udders that milk all away, good teats, great tortuous veins; they are cows "that handle well, milk well, and test well."

The American Ayreshire Register requires a minimum of 8,500 lbs. of milk for cows over five years old. Here are a few records, each being the highest in its class:

A Fine Type of Ayreshire (Croftjane Dinah)

Class	Name	Lbs. Milk	Lbs. Fat	Lbs. Butter
Two Year Old	Hazel of Sand Hill . . .	11,078	627.13	732
Three Year Old	Matie of Sand Hill . . .	13,897	593.16	692
Four Year Old	Bessie of Rosemont . . .	14,102	578.57	675
Mature Cow	Rena Ross	15,072	643.71	751

A new record for the Ayreshire is that of Netherhall Brownie IX, (owned by J. W. Clise, Washington), who has just completed her official test with 18,110 lbs. of milk and 820.91 lbs. butterfat (958 lbs. butter). She is now the World's Champion Ayreshire cow. Is it any wonder the popularity of the Ayreshire breed is continually growing?

How is your Ayreshire doing?

THE DUTCH BELTED The Dutch Belted breed, though few in number in the United States, or even their home in Holland, are worth considering on account of their peculiar marking with a white belt, or blanket, on a black body. This picturesque breed was

developed by, and for many years reserved to, the nobility of Holland. It has some dairy importance; in the Pan-American Dairy test in 1901 ranking eighth in the contest of ten, though in butter-fat its rank was at the bottom. In beef it is hardly superior to the dairy breeds. It lacks in size and while thriving on abundant feed and care it does not tend to produce great flesh. Its picturesque quality is one of the strongest claims for attention. Like the Highland cattle in connection with breeds of the beef type, the Dutch Belted has been employed for purposes of contrast. They were first imported to this country in 1838; but while now scattered from New York to California, they are not found in numbers; and on account of their scarcity, there are almost no Dutch Belted steers on the market.

"NONE OTHER GENUINE" THE POOR MAN'S COW

The Dutch Belted do very well for novelty or beauty. But it takes the Kerry, from the mountains of western Ireland, to live up to the real definition of a "poor man's cow." Kerry are small, in color black, red or roan. But whatever the color, they fill the milk pail and make it worth while to churn for butter. When at last they come to the block they may not show much beef, but what they have is of excellent quality. The breed has a positive genius for grazing, and gets along with the least possible care. What would the Irish laborer do without this cow? It is true the Kerry is slow maturing; but this fault is undoubtedly due to the hard conditions under which it has been bred. Well cared for in this country, Kerry cows sometimes produce calves at three years; but in Ireland the sixth or seventh year is the average.

THE DAIRY MAN Come now to another practical consideration. It is, perhaps, just as necessary to develop dairy men as it is to develop dairy cows.

Two milkers of a herd show, one, full pails and contented animals; the other scant pails, fretting, impatient cows, and sores developing on the sensitive udders. Is anything very serious the matter?

Talk about dairy temperament in the show ring! Better apply the test to the new hired hand. Gentle handling, proper stabling, punctual and sufficient feeding, are prime characteristics in the profitable type of man to care for dairy cows.

On these depend that **CLEANLINESS, COMFORT, CONTENTMENT** which are the chief requisites for a profitable dairy herd.

Don't spoil your good breed by a bad type dairy man.

CLEANLINESS Cleanliness means, beside general order of things, proper care of the manure, in which some say a fourth of dairy profit is to be found. Cleanliness includes white-washing once a year, and brushing down cobwebs, especially from the windows. Light shows up the dirt—makes it easier to keep the barn clean. A dark stable is almost always dusty and dirty. A barn should be light as a dwelling. Cleanliness means spraying a good disinfectant at regular intervals, such as Nox-i-cide Dip and Disinfectant, which mixes with water and is therefore cheap. Nox-i-cide Dip and Disinfectant is an ideal stable disinfectant, as it destroys odors, prevents flies from breeding, and destroys all germs. But see page 9.

COMFORT Comfort means at all times adequate protection: in summer, from buzzing, nerve tormenting, milk-reducing, flesh-shriveling flies; in winter safety from exposure, especially to chilling winds. Try this experiment. Leave the best cow out in the cold winds, and see for

yourself how exposure will take the milk out of her faster than she can put it in. In summer make the fly spray test: Spray Conkey's Fly Knocker about the barn or stable, and spray cows just before milking or while out on the pasture. Instead of giving most of her energy to tail lashing, Brown Betsy or Lilly Lass will chew her cud with vigor, in the spaces between quiet grazing, and you can be sure of her full milk production.

22 POUNDS OFF! Missouri Chief Josephine, the Holstein record breaker, is always fully protected from flies. On one occasion when this care was omitted she decreased twenty-two pounds a day in milk production. Cheaper to fight flies for your herd in summer than to lose out on your milk contracts. One enthusiast writes that "Conkey's Fly Knocker is worth the cost in one milking."

MORE CALVES There never was a time in the history of dairying when milk cows were so scarce as now. The great need of our dairy sections is to raise more calves and buy fewer and to breed for dairy points from pure bred sires whose dams show good performance, and whose grand-dams, even, were "some punkins" at the milkpail. When breeding for dairy cows, you are breeding for storage and reservoirs. Weed out all that fail individually to meet the requirements, no matter how pure the blood.

MILK SUBSTITUTES FOR CALVES Dairies which need all their milk supply for their contracts must use substitutes for feeding calves.

They can frequently buy skim milk, which with hay and grain makes the best substitute for whole milk for calves. It gives an average daily gain of $1\frac{1}{2}$ lbs., or about 300 lbs. at 5 months. Another milk substitute, somewhat sensational but standing up to actual test, is bean soup,—the navy beans boiled until soft, then squeezed through a colander and made into a salty soup. With this, some shorts, blood meal and cottonseed meal, and the ration will be found very cheap. Feed about three quarts to a calf. Clover hay and corn fodder make good forage for growing calves.

THAT YOUNG HEIFER Breed her at about 21 months, so that she will drop her first calf at $2\frac{1}{2}$ years. During that time feed extra well; for you see she is still an immature, growing animal, and you can't afford to check her development for that of the first calf. Gentle manipulation of the udder at regular times will tend to increase its development, hence future capacity. Then when the calf comes be sure to turn the young heifer over to the best, most rapid, most skilful milker, as the manner of milking will increase the milk supply. Do not breed her again until six months after first calving. Try to keep up her milk flow by skilful management in milking and care and water and feed; for you must establish right now the milk habit. She should keep up a good flow up to 2 months of the time of her next calving; and if her butter record for the whole time is something between 200 and 250 lbs. you can call it satisfactory. If less than that,—to the butcher, for he needs her more than you do in the dairy. Also, if she goes dry before the limit set in this first test, don't waste time with her but finish her quickly for beef. After this second calving the young heifer can be bred immediately, as is the usual custom with dairymen. With mature cows the best results are obtained by requiring them to freshen each year, permitting each cow to go dry for

6 weeks to 2 months a year. Of course there are instances of cows keeping a good flow for 2 or even 3 years without calving but this is hardly a profitable plan.

THE CALVING SEASON Distribute the calving season, letting most of the cows calve in the fall; then you'll have plenty of winter milk at the season when milk brings most money.

THE DAIRY BULL Absolutely he is the best animal you can find for the biggest sum you can appropriate to that purpose. When you want to economize go without neckties, or even socks, but don't economize in the matter of your dairy bull.

A good one, pure bred, with a record in the family, especially on the maternal side, for milk-pail performance, will grade up your herd in short order, even if ordinary to start with. But there is an even better test—the record of his daughters. If he gets good daughters keep him, as long as he is serviceable. Do not sell a good bull simply to get new blood. Keep him right up to condition, with not too much fattening feed, but a good ration of ground roots, wheat bran, gluten meal, oil meal, silage and clover hay. Give him 5 to 6 lbs. grain per 1,000 lbs. live weight, for daily ration. Keep him well exercised. Keep him fit and fancy. Turn over to page 47 under Feeds and Feeding and also read what is said about Conkey's Stock Tonic if you want to help your full blood animal to perfect performance in breeding. This is a most vital subject, the basis of pure blood in your whole herd. You can't afford to lose time by failure in even one generation. You want to get each time a good share of what you breed for. Don't trust simply to nature's go-easy method, hit or miss,—a sort of survival of the fittest. At so much per head you can't afford any unfit. There are tried and trusty rules for making a good dairy calf. Results are just as practically certain as your wife's best recipe for ginger cookies.

THE DAIRY RATION In general a good cow eats more than a poor cow. The capacity for feeding is a pretty good gauge of production. Look for large capacity, and then feed full up to capacity. Most farmers don't feed enough. When you feed a cow the first 50 to 60% of capacity goes for maintenance. When you cut off from full capacity you simply cut off your own profit; for the cow takes care of her own body first. It's the over-and-above maintenance ration that goes to milk production. You will find page 35 in its own section the general discussion of feeding, but it is well to state again that on the factory basis you must supply your cows with feed in proportion to production. Give them all the roughage they will eat up clean. When it comes to concentrates, that is grain, a good rule is to feed each cow every day as many pounds as she shows pounds of butter-fat in her weekly performance.

F. W. WOLL'S RATIONS Here are some specimen rations selected from F. W. Woll, arranged for different parts of the country. With good individuals they'll give good milk production. You can select according to local conditions, and vary to suit the individual cow.

1. All she'll eat of cornstalk, with 20 lbs. hay, 3 lbs. wheat bran, 2 lbs. oil meal.
2. All she'll eat of stover; with 20 lbs. roots, 3 lbs. oats, 3 lbs. bran and 3 lbs. gluten feed.

3. All she'll eat of clover hay, 35 lbs. corn silage, 2 lbs. bran.

4. All she'll eat of corn fodder, 40 lbs. corn silage, 2 lbs. shorts, 2 lbs. dried brewer's grains, 2 lbs. oil meal.

5. Or with alfalfa, say 20 lbs. alfalfa hay, 4 lbs. oats, 2 lbs. cornmeal.

Just why these are satisfactory milk rations you will readily see when you read over the general section on Feeds and Feeding.

A POINTER ON FEEDING Never throw down feed immediately before milking; or you'll get a crop of floating straws, seed, dust, etc., with the milk, especially if you are milking into a common unsuitable style of milk pail with top wide-flaring so as to catch all the filth that's going. To avoid this a good plan is to follow some such dairy program as given by the Cornell Experiment Station for winter management, as follows: 1, milking; 2, feeding grain; 3, feed silage; 4, clean gutters; 5, water stock; 6, feeding hay; 7 grooming; 8, turn out in the barnyard when pleasant (best time is 2 hours early in afternoon); 9, water stock; 10, clean stables; 11, feed grain; 12, milking; 13, feed silage; 14, arrange bedding. When a man has followed this daily program it is with a clear conscience he can put the pin in the barn door for the night.

MORE HOME-GROWN FEED One great need for profitable dairy farming is more succulent feeds and especially more home-grown feeds, increasing forage crops and reducing pastures. This means more careful rotation of crops, and increasing use of the silo. Many dairymen today do almost entirely without pasture, even in summer season, but rely on soiling, raising plenty of good forage crops which can be cut and carried to the barn for the animals. Double crops and silos are the aim of thousands of ambitious farmers, reducing acreage, but making possible a larger dairy, with small risk from droughts. But the whole big subject of feeding dairy cows can only be touched on here. A fuller account is aimed at page 35 under Feeds and Feeding.

DOUBLE-BARRELED PROFIT The aim is to increase the amount of production and lessen the cost of producing. A reduction of 10 percent in cost means a bigger profit than an advance of, say, 2 cents a pound in butter. Feed that is home-grown costs less than what you buy, and is better for both cow and owner.

GETTING FOOD OUT OF FEED The great thing to remember with cows is to keep up their appetites so they will relish and make use of their feeds. If it is not palatable, a feed is just that much less digestible. They may eat it; but there is a larger proportion of the substance untouched in digestion. It makes not milk or flesh, but manure. Another point in digestion is this: more than one-half the live weight of animals is water; and 85 percent of the milk yield is water, or course. Now water is the universal solvent,—the substance by means of which all animals and plants make nourishing use of the elements they absorb. So, for complete digestion, furnish the animals with plenty of water. And for milk production, remember what a high percent of water there is in milk, and take deep thought of the old milkman's joke about "watering the milk before it comes from the cow." A 6 gallon milker needs just twice as much water as a 3 gallon milker. Some dairymen say a cow needs about 2 lbs. of water and 1 lb. of feed to each pound of milk produced. At the time Missouri Chief Josephine was giving 100 lbs. of milk per day she drank fully 31 gallons of water—warm water of

course, so as not to chill her internal organs and so cut down milk production. You've noticed, haven't you, that a cow will drink a good deal more water when it is comfortably warm, and always before her?

HELP THE DAIRY BEAUTY TO DO HER BEST

The dairy animal is one with large drains upon her powers. Every year conditions for dairy herds become more and more unnatural. Best care and feeding are the first need for the dairy herd; but an occasional tonic is actually demanded. Conkey's Stock Tonic should be given—a half tablespoonful in the feed twice a day—not continuously but from time to time, as a tonic and alterant. If ailing, a dairy cow should have one full tablespoonful once a day. It will tone up the capillaries of the system, increase the intestinal secretions, rid the digestive tract of worms. Its action on the circulation, through tightening the walls of the blood vessels, is another important factor and helps to counteract the bad effects of little exercise, from which the dairy animal is almost sure to suffer.

THE MILK PAIL TEST It's cheaper to raise your dairy calf than to buy a satisfactory cow. If a cow is extra good she usually is not for sale—not if her owner knows it. When you have selected your dairy cow watch her, with an encouraging but suspicious eye. She may be fooling you. She may have all the good dairy conformation and show a good appetite, and still fail at the milk pail.

"PROVING" A COW Know what each cow is doing. If you don't know what each cow is doing, you don't know what you are doing. Only actual figures for weighing and testing will show you.

HOW A COW "MAKES GOOD" Weigh each cow's milk for three days each month and multiply the sum by 10 to give the monthly average. Put it down in black and white every month for the full twelve months in the year. Add the total. If it shows less than 5,000 lbs. for a year's work, and you've given good care, then that cow is a swindler, imposing on you for her daily feed. In all fairness, if she is a cow of good type and receiving good care—in short, if she is a "good cow"—she ought to show 6,000 lbs. of milk at the end of the year, which is 2,800 quarts. She should also show a test average of 3.5 to 4 per cent butter-fat.

WEIGHT VS. TEST There you are—weight and test. Both are needed. Some farmers think they have a good cow, just because she has a good yield. The barns are full of cows that test 3%; but it takes just twice as much 3% milk to make a pound of butter as it does 6% milk. Another thing, don't figure a milk yield on anything but a yearly basis. Your feed bill and operating expenses are on a yearly basis, aren't they? Keep a cheerful but suspicious eye on the milk sheet. Some cows, like humans, are "four flushers." Don't be fooled by a big show of production that doesn't hold out. Get rid of Bossy if she milks heavily for just five or six months and then goes dry in spite of care and feed.

Weighing milk keeps you right in touch with the herd's condition. If there is any shrinkage you can find out at once just where the trouble is—whether with the milkers or with the feed, or with an individual cow. Your milk sheet is the surest gauge of your feeding system and what it's doing for you.

JUST A CALENDAR—SURE

But keep a record, even if you have to use a plain sheet. One practical dairyman uses a calendar pad for each cow; and after milking jots down the result, until he can make his estimate. These figures don't get away from him, and you can just bet his dairy pays!

For, after all, while there are many and various breeds—all told about 100—the real question is not a choice of breeds but choice of cows: and there are just two kinds of cows: (1) the profitable and (2) the unprofitable.

Which kind are you feeding now?

If it's a fair question, which kind is your "choice?"

Does your record show?

Stick to the scales and the Babcock test!

Which is the Better Milker?

II. Running a Dairy for Profit

Looks like a man would be excused for saying that if there is any business in heaven the dairymen's would be one of the few allowed.

It's certainly pleasant to think about—a herd of healthy, happy, "tested" cows (in heaven of course they'd all be Missouri Chief Josephines, Yeksa Sunbeams, Colantha 4th Johannas, etc.) in a clean cemented stable, comfortable and well bedded. Stalls, light, ventilation, everything first-class and better yet than that. Food, water, everything abundant and of the best, you bet you. No stifling dust or odor in the barn itself. Milking utensils bright as a new-minted dollar and a good deal more sanitary. You can see those milk pails if you shut your eyes; all clean from hot water brushing—no soap, but perfect rinsing in a pure water supply; sterilized—absolutely germless; small topped, and even that opening partly covered from floating dust, fodder, seed, etc. You smell nothing but that good fragrant cow odor that comes with the good milk cow's quick breathing and soft heaving flanks.

THE MILKERS

You see the milking squad—a sound, clean set of men—get into their white milking suits and start to work, with absolutely clean, dry hands. Like as not you'll want to rush into a white milking suit yourself, but the foreman somewhere says not; there's to be no rushing—just quiet, gentle doing all the time—no well-bred gentlewoman of the land is so upset and ruffled by any noisy, bustling, rowdy behavior as these pure-bred milk cows. It's the gentle handler gets the milk; for the cow responds to the coaxing fingers just as she would do to her own sucking calf. You see each milker go over the body of the animal with damp cloth to gather any dirt or dust from the hide, so that it may not fall into the milk pail. With a separate clean wet cloth he brushes the udders carefully, and sees that they are perfectly clean. He discards the first stream from each of the four teats into a

A practical milking stool with platform, so milk pail can not upset.

separate milk vessel. Then milks quietly, cleanly, down to the last and richest drops.

HANDLING MILK Then you see the proper handling of the dairy product. It isn't allowed to stand open in the barn, however sanitary and clean. Warm milk develops bacteria of all kinds rapidly when at a temperature of from 70 degrees to 100 degrees; but very slowly when 50 degrees. At Cornell experiment station an open milk pail, under better than average clean conditions, absorbed 5,000,000 germs in seven minutes. The milk in the ideal dairy is taken to a sanitary room for handling and is cooled promptly, that is, within 15 minutes, to 45 degrees or lower. Then carefully it is packed, sealed for protection in transit, and carried still at a low temperature, to its final market in less than twenty-six hours.

That would be milk fit to offer an ideal market.

And no milk less fit should be offered in any market.

The market demand is for just such milk; and it will pay in turn any dairyman's prices. A quality market calls for quality milk. It pays quality prices.

There's always a chance for the product just a leetle mite better than the market's best; and it doesn't grudge the difference tacked on for the product. **There is a top price waiting for every pint of clean milk.** Clean milk means clean milkers, clean cows, clean utensils, clean atmosphere.

CLEAN MILK Milk is just as clean as the dirtiest thing it comes in contact with from cow's body to consumer.

Does that hit your dairy in any detail of milk management? It doesn't concern us here, but we may as well take a chance at another big truth—that the biggest cause for contamination is after the city housewife gets the product and leaves it around in open vessels, or in various unsuitable atmospheres, or pours it out for her household in far from germ-free "clean" receptacles.

But never mind the city housewife! She'll get **hers**.

SAFE MILK Safe milk is milk handled with every sanitary precaution to guard against filth and germs, but it goes back a step farther—the milk must come from disease-free herds. Tuberculosis is not always told by inspection, and the only safe rule, whether called for by the local law or not, is to have each cow in your dairy tested every year or two, and more often if needed.

The Evolution of a Milk Pail

PROFITABLE MILK A gallon of milk usually weighs about 8 lbs. 9½ ounces. Profitable milk is milk produced from cows averaging at least 4,000 lbs. of 3.5 percent milk annually from a ration economically "balanced" (see page Feeds and Feeding) on the principle of largest producible output on lowest possible raw-material.

Makes a good many syllables, but it means just what we said before—look for the double-barrel profits; make sure you're not a waster

(1) Of the money invested in raw material, feed;

(2) Of the money invested in dairy cows;

(3) Of the marketable product, whether milk or butter, on account of lack of care in getting it to consumer.

Fit these few suggestions on dairying to your own management, and you'll deserve and win one of those comfortable little fortunes so common nowadays from dairying.

III. Dual-Purpose Breeds

Some very pretty things have been hoped and some very ugly things have been said of the dual-purpose cow.

Is the idea right or wrong, anyhow? We may, or may not, agree.

But this much is certain: Even the most profitable dairy breed must produce some veal for the butcher and come to the block herself at the end. Our dairy steers we must fatten and put in tolerable flesh for market.

YANKEE "IDEE!" It's a good American idea anyway, if it does ask a good deal of the cow.

THE DUAL-PURPOSE TYPE A dual-purpose animal lacks the width and smoothness of the beef type, has more neck, more leg, narrower withers and puts on less flesh than does the beef; but it is smoother (meat more even), less angular and tends more to flesh than does the dairy type. During the milking period the dual-purpose animal often loses flesh to a noticeable degree; but after drying off it tends to regain its beef losses. But, of the so-called dual-purpose breeds, we classify each individual specimen according to whether it tends more to beef or to the dairy type. Given a dual-purpose breed, for instance, Red Poll, Shorthorn, Devon, Brown Swiss, etc., it becomes a matter of judging whether the individual tends to (1) beef or (2) dairy type.

THE SHORTHORN We've had a deal to say about this breed already, where it belongs according to breeding science—high up among beef breeds. But here she comes the Shorthorn of milking strain, and heads the list for the man who has a small farm and wants a thoroughly practical cow. Hence we distinguish between the fat Shorthorn, that is beef animal, and the dairy Shorthorn, which certainly, if actions count, behaves pretty much like an ideal dual-purpose cow. Short horns have made some high tests. They are extremely popular because so adaptable to various conditions; but they should not be selected for hard winter climates if expected to be out on range.

THE RED POLLED The Red Polled is a breed rather inclined to beef, as will be seen on page 138, but they have long been familiar in this country as a dual-purpose breed. In fact "Muley" (or polled) cows of a red color have been common in the United States ever since Colonial times. Their original home was in the eastern part of England. In some respects they are our truest form of dual-purpose animal. Their milk flow is fairly full during lactation; and then on drying off they easily fatten. In most of the dairy or beef points they easily rank very fair, which for a dual-purpose animal means very good indeed. They have rather less dairy temperament than the Shorthorns. In milk production at the Pan-American test (1901) they took fifth place among the contestants.

They test about 3.5 percent butter-fat, with higher performance of individual stars. Red Polls are useful for crossing or grading, and are very prepotent for their red color, the polled head. This is important, for the polled head is an improvement when grading a horned herd. It is especially important as a beef consideration, as is shown by the strong preference for hornless cattle—perhaps as there is less liability to accident in shipping.

THE DEVON The Devon breed is one of the oldest. Its home is Devon or the neighboring county of Somerset, England. It probably comes from a small type breed of ancient Britain. Devons were first introduced into America in 1817, and have grown very popular as active grazers on range or pasture. Their meat quality is good, though they are small in size. From the dairy view, they have considerable credit in butter-fat, and most individuals come up to the test. There are practically no remarkable individual performances in this breed. The Devon is beautiful to look at—deerlike, refined. Its color is a bright red, with occasionally white on the udder. There are two types, the North and the South Devon. Both are popular and widely distributed; but the day of Devon glory seems to be waning, for they are not nearly so well thought of as in former days.

BROWN SWISS Swiss cattle are also of two kinds: the well known Brown Swiss, and the Switzerland—an even more popular variety called Simmenthal, or spotted kine. Only the Brown Schwyzer have been bred and imported into this country. These Brown Swiss are a hardy type, good Alpine climbers; in their own country browsing at the high altitude grazing line during the summer, in winter descending to the sheltered valleys and lowlands, and requiring comfortable quarters. They are very ancient cattle, without a doubt; but in this country date only from 1869. Since then systematic attention has been given to their breeding and importation, but they have not yet become popular. In form, Brown Swiss suggest the beef type, yet they are slow maturing. Cows reach 1300 lbs. to 1400 lbs. at maturity; males run 1500 to 2000. The udder is generally of good size, with teats and milk veins prominent. In the Pan-American Dairy Test referred to (1901) they ranked third. The percent of butter-fat is only fair, being 3.30 on the average, but is excellent for cheese making, and has sent the fame of Swiss cheeses around the world. They are adaptable to mountain conditions, but have never been really tried out on our western ranges. Of good animal vigor, the breed is excellent for giving new hardiness to a herd. It would be just the cross to use with a grade dairy herd—say of Guernsey or Jersey characteristics—to raise the beef value.

RAISING VEAL AND BABY BEEF Whether or not we believe in dual-purpose, there is, as explained in the beginning, a beef view to every cow; and any dairy region must to some extent concern itself with raising marketable calves. For baby beef, i. e., early matured beef, quickly forced and fattened, there is a plain advantage in timing calves for fall, when with skim milk and grain and a little proper roughage, they can get through the winter nicely until pastures are ready in the spring. On the other hand, a calf brought up on milk and grass during the favorable summer season, is pretty sure to have a setback when put into winter quarters. When not wanted for baby beef, it is just as well to have the calves in the spring, as is usually preferred by dairymen. But with warm barns and ample dairy ration, the fall calf brings full winter milk supply, and that's a big advantage. Compare what was said on this head page 127.

under Dairy. Raising of baby beef is something of a specialty. As already indicated, it takes a good breed and "good grade of good breed" to come out with baby beef, forcing the calves right along to "maturity" or market beef at the age of one or two years. It's clearly a problem for feeding. The whole system is carefully outlined in the important section on Feeds and Feeding.

THE PROBLEM STATED Briefly, the problem is—How to cheat nature out of four years; for nature, old slow-gait spendthrift, wants five years to develop a 1000 lb. steer. To get that weight in one year you must feed way beyond the normal requirement; and at the same time keep the animal's health and vigor for continued growing. It is for just such conditions that we advise the more or less regular use of Conkey's Stock Tonic in the daily ration. This Stock Tonic is not in any sense a food; but it is a tonic, corrective, alterant and bracer, which will keep the organs in good function during the forcing process. In addition, the tonic is treated with certain condimental and other "salts" to savor the feed, helping the natural appetite so that the forcing ration will be accepted and digested. But read careful directions, page , and also the paragraph on appetite in the section on Feeds and Feeding.

It is a profitable thing to master, this feeding for baby beef. Heifers fattened for beef at one to two years bring as much per pound as steers. Besides, there is the extra short feeding period for both heifers and steers, as against the three years' feeding period for full grown beef cattle. The stockman saves feed stuff and gets more turnovers for his capital invested. Every dollar in baby beef keeps busy season after season. Needless to say it is this nimble exercise of turning it over that gives growth to a dollar.

IV. Beef Breeds

Good-bye, Cattle King!

Guess it's better for all of us the old extravagant days of the frontier range are gone forever, the land now cut up in improved allotments, and the beef herds gathered in smaller compass. There's a chance for more of us in the business, and a better show for the dollars. We may lose something in long horn and cowboy equipment; but we can still get that, when we want it, in moving picture shows and Eastern melodrama.

This is the day of concentration of time, energy and money: more cattle in smaller space; more beef per head of cattle; quicker, better finish for market; more expensive feed and more of it; but bigger, better, safer profits.

Any kind of cattle, with any kind of horns, and any length of leg, were utilized under the old system of raising beef for market. But today the market demand is higher. A steer must grow right along and be quick about it. We need the money. He must have plenty of good high-price cuts, and not so much cheap neck, etc. He shouldn't walk on stilts—these long leg bones increase the percent of waste as "butcher's offal."

In the old days it took five or six years to grow a steer to all the growth he would get and in the end the quality of the meat cuts was only fair. There was no uniformity in the animals on which the buyer could base his estimate. Pasture was cheap, and there was practically no care of stock, and but small expense for the few cowboys and foremen needed. Any sort of accident might happen—disease, drought or storm—and now way to guard against it. On overcrowded ranges you saw cattle die by the hundreds. In time of drought on the plains they went down by the thousand. The disasters of 1884 were the limit of such speculative endurance; moreover the growing sheep industry helped to overcrowd the ranges; and a new system of cattle raising began in this country.

Spanish ancestor of long-horn cattle of Western plain

WHAT WAS THE NEW SYSTEM?

Better stock, better care and attention; more systematic feeding; better market condition; better market prices—these points make up the new

system.

Of course, beef is higher—why shouldn't it be?

Of course, more is needed, just about a third more is an absolute necessity for scant home consumption. The number of beef cattle in proportion to population is continually decreasing—decreasing is a slow-gaited word—jumping down the track is more nearly expressive.

Fact is, we are far short of our own needs. Yet the United States ranks second in its possession of cattle—we own 71,000,000 of the 430,000,000 which make the world figure. Our population is 99,000,000.

No wonder there's not enough beef to go around!

If you are thinking of going into the beef business, take a long look around at the beef breeds now developed, and you'll certainly find some wonderful "critters."

To begin with, a beef animal should have just as little leg as is consistent with getting around for health and convenience. You know how it is with sheep; and that it's the low set mutton maker that dresses out to best advantage. With beef, too, you find a low broad deep-hung body, smooth and evenly covered, not meaty in patches. The outline is rectangular or "blocky." The back is broad, with back and ribs especially well covered; short neck, for

this neck meat is cheap and the less you have to raise the better. That blocky, rectangular outline is the main thing, the "parallelogram shape" with back and belly lines in straight parallel.

SIZE Size is not so important as quality and finish. This is a type more economical to produce for the feeder and with less waste to the butcher. In fact, we are all satisfied; for it means better meat for the consumer.

SHAPE Shape is the important thing. A compact square shape, in fact, a block is the thing to look for; ribs well sprung, loins wide and deep, thighs plump and meaty; in short, room for choice cuts. It must not be leggy.

QUALITY Quality counts. Look for fine bone, smooth joints, delicate horns (if any), delicate ears; chief of all, a hide that is fairly thick and protective, but with hair fine and silky. Hair, you know, is generally taken to indicate quality.

BEEF BREEDS The cattle that come up to these requirements are chiefly the Shorthorn or Durham, our old dual-purpose friend, and the Hereford, Galloway, Devon and Aberdeen-Angus.

WHICH IS BEST? Suit yourself which is best, i. e., best for you. It would be a waste of time to claim for any one of these fine types relative superiority. For early maturing qualities and general good beefing the Aberdeen-Angus takes the lead, according to some thinking. You know it was the Angus breeds that topped the show at the 1910 International in Chicago. But the highest priced steer ever sold in this country was a Hereford; while the grand champion prize in individual steer classes at the International 1907 went to a prize Shorthorn, and the same breed took the reserve championship a year later.

When you've narrowed down to a few breeds, better give up trying to get it down any farther.

Every breeder or owner has his favorite best breed, just as he has belief in his favorite best automobile. It is hard to estimate popularity, but if the Herd Registers are the test, then the Shorthorn must be the most popular of all the beef cattle breeds.

SHORTHORNS Shorthorns were first imported in 1790; some claim a few years earlier even. But their real popularity dates from about 1835, when very large importations were made; and the stock was generally distributed. Shorthorns are of good beef type and mature at 30 months, being fully grown at four years. While of medium hardiness and grazing ability, they do very well under all conditions of range and climate. They are good milkers, as we have seen in the description under dual-purpose cattle. The home of the Shorthorn was originally the counties of York, Durham and Northumberland in Northeast England. In fact, they were often called Durhams. In color they are red, or red with white, sometimes roan, sometimes all white. In the red or roan they are often variously shaded. As with all dual-purpose cattle, there are fat Shorthorns and dairy Shorthorns, favoring distinctly one type or the other.

HEREFORD The Hereford is certainly a kingly breed, profitable for beef production and next to the Shorthorn in popularity when the Herd Registers are taken as the basis. The Hereford was developed in England as far back as 1627. The Hereford has made more improvements over here than any of the beef breeds, with the possible exception of the Galloway. Breeders have especially set themselves the task of correcting the throatiness or dewlap and also have greatly improved the rump and thighs for market. Herefords are big cattle, the males running 2500 lbs. mature, the cows 1500. In addition they weigh heavy for size, and show up well in thick marbled cuts of meat. They mature very early. They actually are the best of all breeds for "baby beef." But they often fail in

milk and their calves have to be "nursed." This is hardly a serious fault, however, in face of their other good qualities; and especially as many believe skim-milk fed calves are better anyway for quick fattening, as their early handling and training stand them in good stead. "Baby beef" is a specialty, not only of the grower but of the breed. It always requires pure beef breeds, and good grades of breed. When you get hold of a little Hereford steer that is carefully bred, it doesn't take him very long to become literally a "living block of beef." Herefords are red in color, with white face, white mark from throat along lower part of the body, and white tip on tail. The breed is a hardy one; more so than the Shorthorn, and also good rustlers on range.

Champion Angus Cow—The kind that makes juicy beef

ABERDEEN-ANGUS The Aberdeen-Angus probably ranks third in popularity, if we still estimate by the Register; but what happened at 1910 International may make new history for beef breeds. Anyway, if you consider the strictly hornless beef cattle, the Aberdeen-Angus, is positively first. The Angus comes from a damp and cold climate and is accustomed to a hilly or mountainous country. Their original home was the highlands of Northeastern Scotland, the county of Aberdeen. The Angus is a good grazer, as would be expected from his history and place of origin. In quality of beef they rank with the Galloways, the best of all. In fact, they resemble the Galloway in many points, though better milkers. They have been bred principally for meat since their introduction to this country in 1873, although in Scotland they are encouraged as milkers. The Angus is smaller than either Shorthorn or Hereford; but for size is heavier than any other breed. The rise in popularity has been great since the introduction of the breed in this country, as they have been found very useful in crossing. In fact, the Angus is very prepotent and when used as a cross 75% to 90% of the offspring are characteristically black and hornless. This hornless feature gives them an advantage with buyers, as all hornless cattle are considered better purchases live weight, as they suffer less injury in shipping.

GALLOWAY The Galloway is also hornless like the Angus. Also like the good Scotch breed they are famed for excellent beef, and for good Scotch hardiness on range with considering rustling ability. In size it is even smaller than the Angus. Galloways likewise have remarkable vigor in breeding, and Galloway bulls can be relied on for 95% to full 100% transmission of type. This is so, even when crossed with common cattle, even those that are horned or indifferent in the matter of color. In time past the Galloway has been criticised for flatness of rib, that is, lack of spring to the barrel. Another criticism was a lack of readiness to respond at once to generous keep. These faults have been very much reduced the past quarter century by careful breeding, so that the Galloway now takes high rank unchallenged. It is true they are still slow to mature, and slow to fatten, and still a little flat in the rib. But their bodies are long, close to the ground, and they have good rumps and hindquarters. This breed is hornless, not even having any marks or "scurs," as the Scotchmen call them. The head is rather more flat than peaked, and the

Devon

Sussex

Galloway

ears are well back and point straight up. The most noticeable point in appearance is the beautiful long, wavy black hair, which makes the characteristic and valuable Galloway hide. Black has been thought to show greater hardiness in the breed, and breeders have tried to fix this black color in the Galloway. White is now considered a disqualification, though brown or reddish tint in the hair is thought rather favorable; in fact, is considered a mark of pure blood. Galloway hides are popular as they deserve, and expensive as they are popular. Some even compare them favorably with the famous buffalo, for use in robes, rugs, etc. As said above, the breed is not over strong in milking, but Galloway cows can usually take care of their own calves. The best known herds are now in Indiana, Illinois, Missouri, Iowa and Minnesota. The breed came to us originally over the northern frontier in Michigan (1870) through Scotch settlers in Canada.

DEVON The Devon breed, while one of the earliest brought to this country, since we find them in the old colonies, have never reached the popularity they deserve as beef animals. Maybe this is because they do not come up to modern weights for beef cattle, and are not so easy to fatten. They certainly make good beef, what there is of it. The slim and beautiful horns of the bright red Devon cow (often she is called "Ruby") are fine in the landscape, but as said before, buyers of beef are always influenced against horned cattle. The Devon has a good record as a milker, for which compare page — under Dual-Purpose.

RED POLL The Red Poll (crossed to some extent with Shorthorns and West Highland cattle) was introduced in the United States from the east coast of England in 1879, and is very useful for grading native stock for better beef type. In size Red Polls are smaller than

Shorthorns. They mature early and graze well. They might claim attention for dual-purpose, as they produce a good quantity of milk. In color they are bright red, with white tip on tail and udder. See also under Dual-Purpose.

POLLED DURHAM Polled Durhams are another cross breed, being Shorthorn stock bred hornless, the result of special attention in Western Ohio. They are essentially the same as Shorthorns, their pure sires, though improving in milking qualities. As beef producers they rank well. They are a very practical type, and are now distributed pretty thoroughly from the Mississippi to the far west, and are increasing in popularity.

SUSSEX Another breed distributed in our central valley is the Sussex, imported in 1884 but hardly yet established as popular, although we find them in Indiana, Tennessee, Oklahoma and Texas. The Sussex

Aberdeen Angus

Hereford

Shorthorn

are a large beef breed, in form much like the Hereford, but in color red. Thus they have the blocky, well sprung, capacious body of a true beef type. Unfortunately they are horned, which is against them for shipping. In their original Sussex home in England the breed was much used for draft and farm purposes. **They are early maturing**, though not as early as the Hereford; but in grazing qualities they equal that breed. They would certainly do well in the Mississippi Valley; and enterprising stockmen are uniting to increase their popularity there. The Sussex would be valuable for crossing on ordinary grade cattle for beef purposes. They dress out at an unusually high percent. The following is averaged from Prof. Henry's table:

1 year.....weight	1452 lbs.....	dressed	65.42%
2 year.....weight	1837 lbs.....	dressed	68.18%
3 year.....weight	2064 lbs.....	dressed	67.98%

WEST HIGHLAND A very interesting breed is the West Highland. Itself a picturesque type—hair long and shaggy, in color maybe brindle, with horns widespread—the West Highland can easily be credited with being the descendant of the ancient wild herds of Great Britain. This breed still has a wonderful hardiness, and can make a living on a range so bare and poor that any other would surely starve. They almost surpass the Galloway in this respect. The milk yield is small, but they grow excellent beef. The animals are small, averaging 900 lbs. for the cows, and 1200 for steers. They are hardly suitable for grading up native stock; but a great many have been imported from the Scottish West Highlands simply for the purpose of lending contrast to our better known breeds.

WHAT BUYERS WANT

Buyers nowadays discriminate sharply against cattle with horns, on account of danger in shipping. Good advice is to dehorn your breeds or select the hornless variety.

Buyers, too, look for that "finish and glisten—that roll to the hide" which goes only with good quality.

Buyers look to uniform fleshing, no bare spots, but good even meaty covering to the frame, quickly told by the hand as it runs over the animal's back.

A low, blocky animal that matures quickly and sells for high-priced meat is the profitable beef type.

An unprofitable feeder has legs too long, back too sharp, lines not straight and blocky, and is thinly or unevenly covered with flesh.

MARKET CLASSES Beef Cattle—900-1600 lbs. Prime if 1200 to 1600 lbs. Baby beef 800-1000 lbs. one to two years of age.

Texas and Western Range—Good condition and finish. Usually bought as "feeders" and finished in the corn belt.

Butcher's Stock—Culls of beef cattle from feeders. Tolerably fat cows, heifers and bulls which are not in best market condition, though given equal "finishing" feed as high grade beef animals.

Cutters and Canners—Thinner culls from beef animals. Never choice, but grade from inferior to good. Includes "bologna" bulls.

Stockers and Feeders—Calves, yearlings, two-year-olds, called feeders if to be shipped for finishing. 900 to 1000 lbs. Stockers are 18 months or more, weighing 450 to 900 lbs.

Veal Calves—Graded for age, weight and condition, 80 to 160 lbs.

In all the foregoing, quality and market finish are the first essentials; but size, appearance and conformation are considered.

Beware of the danger of short feeding. In the spring of the year it often pays to rush the short-fed cattle to market before the run on southwestern grass-fed cattle begins. But as a rule an animal fed six months will carry twice as much fat as an animal fed two months, and will bring from 75% to 100% more money.

The whole big subject of feeding has to be worked down to a science. Turn to and read carefully the section on Feeds and Feeding, page 20.

West Highland Cow

Common Diseases of Cattle

ABORTION This is one of the most serious dangers the stockman has to guard against—the cause of his heaviest losses. “Slinking of calves” usually spreads to the whole herd, unless properly treated. The stockman must be prepared for this danger and save this loss (1) of calves, (2) of time and expense for resultless breeding, (3) milk flow, for there is always a set-back, (4) danger to the cow and loss of her immediate value as a breeder, (5) danger to the whole herd through infection.

There are two causes of cattle abortion, accidents and contagion. **Accidents** are such as come from slippery or sloping floors, gutters too deep, fright, chasing by dogs, railway journeys, smutty or rusty fodder, causing poisoning from ergot; wrong feed, causing indigestion. **Contagious** abortion is a germ disease and spreads from cow to cow in the herd, or the bull may carry the infection. The tendency is for the aborted cows to become immune but they still spread contagion to other animals.

Symptoms If in the first three months of gestation, there is a bloody or mucous discharge. If in later months, straining, uneasiness, swelling, hot and sore udders, milk in udders, etc.

Treatment Separate the affected cow from the others. Burn the offspring and afterbirth. Be on the safe side and treat all cases as if they were contagious. Disinfect thoroughly with a strong solution of Conkey's Nox-i-cide Dip and Disinfectant, $\frac{1}{2}$ pint to a gallon of water, to kill all germs on the premises, and repeat this thorough disinfecting 10 days later. Wash the external parts of the affected cow with soap and water, then rinse off with the Nox-i-cide solution, 1 part Nox-i-cide Dip and Disinfectant to 50 parts water (that is, 5 tablespoonfuls to 2 gallons of water). Use from 3 to 4 pints of the same strength solution as an injection and keep this treatment up every day until the vaginal discharge stops and the appearance of the lining membrane is normal. Give a hypodermic injection, under the skin in the neck every 10 days, using 2 drams of a 3 per cent. carbolic solution (made up by a druggist with glycerine and distilled water). All authorities agree that this is both a preventive and a cure for abortion. This is not a serum and note this fact: as yet there is no true “serum” treatment in America, although experiments are being tried with serum in Denmark.

Exercise care in giving the hypodermic. Make sure that the hands are thoroughly clean and that the skin where the needle is inserted is thoroughly clean and free from germs, by washing with Nox-i-cide Dip and Disinfectant solution, 2 tablespoonfuls to a pint of water. The syringe must be sterilized also, or an abscess may result from germ infection.

Prevention Frequently this trouble can be avoided by the following preventive measures:

Disinfect thoroughly with strong Nox-i-cide solution ($\frac{1}{2}$ part Nox-i-cide Dip and Disinfectant to 1 gallon of water). With Nox-i-cide solution (4 tablespoonfuls to 2 gallons of water) wash the external parts of all cows in the herd whether known to be infected or not; and every ten days give the carbolic injection, or mix carbolic acid with the soft feed, using 2 drams of acid well diluted with water. This should be given each pregnant cow every other night during every other fortnight, from the beginning of the third month to the end of the sixth or seventh month. Also flush out the sheath of the bull with the Nox-i-cide solution, half the strength of

above, after each service. Germs of contagious abortion can live fully 7 months in a stable, and at least twice that in the vagina of the cow.

A course of Conkey's Stock Tonic given strictly according to directions will put more resistance in your stock and act as a general preventive of abortion. Stock Tonic will correct faults of digestion and thus prevent the danger of abortion from that cause.

ANAEMIA Symptoms are pale, bloodless condition of the mucous membrane; tongue soft; weak debilitated condition, fast breathing; usually the hair is harsh and dry. This trouble may follow some other disease or may come from poor food, foul stables, bad ventilation or anything that will rob the blood of vital elements. Lice or other parasites may cause it.

Treatment Correct the cause of the disease. See that the animal has good feed and mix with the regular feed Conkey's Stock Tonic according to directions. This is tonic, alterative treatment, helping all vital organs to do their work and increasing the blood supply. If lice are found, treat with Nox-i-cide Dip and Disinfectant according to directions, or use Conkey's Lice Powder.

ANTHRAX OR CHARBON A malignant, extremely contagious blood disease due to a bacillus, which thrives in rich, moist soils which have become infected from animals that have died from anthrax. It affects overfed cattle, sheep, horses, and sometimes hogs. The disease is dangerous to man also, though much less fatal.

Symptoms The animal goes down suddenly with fever, loss of appetite, quick breathing, rapid but feeble pulse; swellings appear, sometimes hot and painful at the start but becoming cold and painless. Sometimes there are eruptions, boils, etc. on the body; hemorrhage of bowels and bladder, etc., also blood from nostril and mouth. The swellings do not crepitate, or crackle, when touched (which is one difference between Anthrax and Black Leg). Post mortem examination will show the spleen enlarged, which is another difference between this disease and the very similar one called Black Leg.

Treatment Not practical, on account of the extreme danger to attendants or to other animals in the neighborhood, as infection can come through flies, mosquitoes, etc., or contact with the diseased body, or breathing air in its neighborhood. Prevention is the only treatment, and consists of burning the anthrax carcass or burying it in quicklime, removing the herd from the dangerous pasture, draining the pasture; thorough disinfecting of the herd with Nox-i-cide Dip and Disinfectant solution (2 tablespoonfuls to a gallon of water), also thorough disinfection and white-washing of the premises. Since the very fat, overfed animals are the ones that succumb quickest to the disease on account of the excess of waste matter in the blood, it is necessary to guard against bad blood by the use of Conkey's Stock Tonic when animals are fed heavily. This keeps up digestive power, stimulates the walls of the blood vessels, increasing circulation and cleansing the blood from waste and impurities and giving the animal healthy resistance to blood disorders.

BLACK LEG Black Leg is similar to Anthrax, but affects young animals only. There is no enlargement of the spleen as in Anthrax, but there are swellings under the skin on thighs, neck, shoulders,

breast, hock joints, flank or rump; and when these are pressed they give out a peculiar crackling sound on account of the gas accumulated by the diseased condition of the blood. Death comes quickly and after death the diseased place shows a dark color, although the blood is not dark. This black color gives the name Black Leg or Black Quarter.

Treatment is not practical, because of the danger from infection as in the case of Anthrax, but the same preventive measures described under Anthrax can be applied to this disease, disinfecting with Conkey's Nox-i-cide Dip and Disinfectant, changing pasture, etc. Separate the well animals from the sick, give each a 6 ounce dose of Epsom salts to clear the system, and feed on easily digested food for at least two weeks, with Conkey's Stock Tonic mixed with the feed to insure proper working of bowels and bladder and to rid the body of all impurities generated. Disinfect the whole premises thoroughly, remembering that there is extreme danger in the dust itself, which often harbors infection. Considerable success has followed vaccine treatment, and many state colleges or experimental stations send out Black Leg vaccine direct to stockmen on application. They offer to do this at a nominal charge for the actual cost of preparing the vaccine. It can also be had from the U. S. Department of Agriculture, Washington, D. C. Address Chief of the Bureau of Animal Industry.

BLOAT OR HOVEN This is an accumulation of gas in the first stomach or paunch. The cause is usually a sudden change of food, especially an agreeable change, such as from dry to green fodder. Too much grain, or indigestion from any cause may produce bloat. But the most common cause is grazing on wet grass, alfalfa or clover, in warm weather, when fermentation takes place quickly.

Symptoms Swelling of the left side, over the paunch. Restlessness, anxiety; the animal stops feeding, breathes hard with nostrils distended. Relief must come quickly or the animal will die from rupture.

Trocar and canula

Treatment Act quickly. A stream of cold water thrown on the left flank will often start muscular contraction, expelling the gas naturally. Rubbing the left side vigorously will sometimes serve the same purpose. But if the swelling is very great and gets

worse, the quickest and best way is to use the trocar and canula (a stylet or dagger in a hollow tube sheath, see cut). Plunge this instrument into the upper part of the swelling between the last rib and the angle of the haunch, about a hand's breadth down from the

transverse lumbar process (see point marked with cross in the cut) over the paunch or rumen. When you pull out the trocar this leaves the hollow canula in place, through which the gas can escape. Many farmers use a long thin-bladed knife instead of the trocar, but unless the cut is held open with a quill it will close as soon as some of the gas has escaped and the skin relaxes. Remember, if you have no trocar and canula handy, in an emergency you can use a knife for the trocar and the long spout of the oil-can from the mower for the canula, of course, cleaning and sterilizing both by dipping in a strong Nox-i-cide solution. For medical treatment, give a pound of Epsom salts, or 2 ounces of turpentine in 1 pint of raw linseed oil, or 2 ounces hyposulphite of soda and 1 ounce aromatic spirits of ammonia in 1 quart of water, any of which will prevent further fermentation. Remember prompt action is what saves cattle when bloated. After the acute symptoms have been relieved put the cattle on regular Stock Tonic treatment.

BLOODY MILK Usually caused by some accident or injury to the udder, bruising, or chilling from resting on a cold floor. Sometimes the cause is tuberculosis.

Symptoms Sometimes the milk is streaked with blood, sometimes it shows a sediment of blood after standing.

Treatment If not tubercular (that is if the cow does not respond to the tuberculin test), treat as follows: Milk carefully, then bathe the udder in cold water and apply Conkey's Bag Remedy, rubbing it in gently. Keep the cow for a while on feed in which Conkey's Stock Tonic has been mixed according to directions. Have plenty of bedding in the stall so that the udder will not be chilled or bruised when the cow is lying down, and see that the cow next to her cannot step on the udder, as this is a frequent cause of injury.

CASTRATING This operation is best performed between the second and fourth weeks. Conkey's Nox-i-cide Dip and Disinfectant in a 2 per cent. solution, 1 tablespoonful to 1 quart of water, should be used to sterilize the knife, and also to wash the scrotum before cutting. After the operation dust on Conkey's Healing Powder according to directions. If in fly season protect the calf by spraying it with Conkey's Fly Knockor or keep the calf in a dark stable until the wound has healed over. Carefully wash and sterilize the knife after each operation.

CATARRH—COLD, etc. A common ailment, from change of weather or any depressing condition. Especially liable to happen after calving.

Symptoms Usually starts with a chill, followed by fever and general indications of cold—a rough, dry nose is followed by a watery secretion, later turning into a thick mucous discharge. Almost always there is some digestive disorder; the animal loses appetite and suffers with constipation or looseness of the bowels. Eyes are swollen and inflamed and very painful.

Treatment If possible separate from the rest of the herd and in any case use extra care in disinfecting, using Conkey's Nox-i-cide Dip and Disinfectant according to directions. If constipated, clean out the system with Epsom salts, dose 8 ounces to 1 pound. Put the cow on easily digested feed, and use Conkey's Stock Tonic with each feed, to tone up the system

and keep it open. Give internally three times a day 1 tablet of Conkey's Fever Remedy as directed. Treat the eyes with Conkey's Eye Remedy. If there is a discharge from the nose, or any difficulty with breathing, Pi-no used as an inhalant from steaming hot water solution will relieve the condition.

Prevention Disinfect thoroughly with Nox-i-cide Dip and Disinfectant to prevent the spread of the disorder.

CONSTIPATION IN CALVES With newborn calves this may be the result of failing to dry off the cow before calving, so that the colostrum (first secretion in the udder for the offspring) does not have a chance to form. This colostrum is the laxative supplied by nature to empty the bowels of the new-born. Where the calf is constipated we recommend 2 to 4 tablespoonfuls of castor oil, with an injection up the rectum, using 1 pint of warm water and 1 teaspoonful Nox-i-cide Dip and Disinfectant stirred or shaken to an emulsion. If the calf is brought up by hand, be sure the milk is not too rich or from a cow too far along in lactation; or, where skim milk is used, do not add calf meal or other grain too early, as the salivary and pancreatic ferments necessary for digesting starch are not developed at first. Feed the milk at blood heat, never cold, as cold milk is a very common cause of trouble.

COUGH Never neglect the symptoms of coughing. When the cough is from tuberculosis no treatment is worth while since the animal is unfit for breeding purposes and neither its flesh nor milk would be fit for human food. When simply the result of a cold or sore throat, treat as follows:

Treatment Spray or swab the throat with Pi-no, mixing with water, according to directions on package. Rub the throat on the outside, from ear to ear, with Conkey's Warming Liniment. This preparation is penetrating and will allay the pain and soon heal the soreness. Treat twice a day, or if a very bad case treat oftener, since treatment greatly relieves the animal's suffering. In this case, also Conkey's Pi-no used in a bucket of steaming hot water, or in a nose bag, as an inhalant, will relieve the condition. Where there are ulcers or sores in the mouth always separate the animal. Cough (pneumonia) is often associated with navel infection. There is no excuse for navel infection as it is entirely preventable by simple precautions at birth, wetting the navel with 1-1000 solution of corrosive sublimate twice a day until the cord shrivels up and drops off, leaving no raw spot, or Conkey's Nox-i-cide Dip and Disinfectant can be used. Before the calf is allowed to suck, wash the cow's udder with a solution of 1 teaspoonful Nox-i-cide Dip and Disinfectant to 1 pint of water, as otherwise the calf is liable to infection.

COWPOX This is an acute contagious disease, the first symptom of which is slight fever, then tenderness and inflammation of the teats. Small lumps like shot form under the skin, then soften into small pustules, which break and yellow matter runs from them. This discharge dries into scales or scabs. The teats are very sensitive and painful and the cow suffers greatly when being milked. The disease is spread by the milker's hands.

Treatment Separate the cow from the rest of the herd, as the discharge is very contagious. Milk her last of all, so as to avoid danger of infecting the others when milking. If possible, use a milking tube, steril-

izing the tube before using, and also afterwards in a solution of Conkey's Nox-i-cide Dip and Disinfectant, 1 teaspoonful to 1 pint of water and wash the hands of the milker in the same strength solution before and after milking the cow affected. Twice a day wash the udder with this solution and gently dry by patting it with cheesecloth or dabbing with cotton batting. Apply Conkey's Bag Remedy to all large lumps or sores; or you can use $\frac{1}{2}$ ounce hyposulphite soda dissolved in 1 pint of water. If the scabs are very bad it may be necessary to soak them in a warm solution of Nox-i-cide in order to remove them, and then apply Conkey's Pain Lotion.

Prevention Be sure to milk the affected cow last and wash the hands thoroughly after milking. Disinfect the quarters thoroughly with Nox-i-cide Dip and Disinfectant as directed on package, and be sure to pour a little Nox-i-cide solution on a cloth and wipe off the udders and teats of all other cows before milking. This will save any chance of the disease spreading to the rest of the herd.

DEHORNING Dehorning is not a dangerous operation if care is taken to disinfect the wound, and remove all horn dust. A common saw can be used but the regular dehorning instruments sold for the purpose are easier both for the operator and cattle. Be sure to cut close. Dust the wound with Conkey's Healing Powder and it will heal over quickly.

Prevention Horns can be prevented from growing simply by touching the horn spots of young calves with a stick of caustic potash, during first week, before the horns have a chance to appear. Use tin foil to protect the hands from the caustic pencil, and moisten the point of the pencil in water before applying. Do not get the caustic too wet or it will run down into the eyes. When not in use keep the caustic potash in a bottle, well corked.

DEPRAVED APPETITE Cattle sometimes lick and chew stumps, fence boards and even filth, and their coats show rough and staring. Usually the cause is some fault of feeding and should be corrected as follows:

Treatment Examine the ration and see if it gives sufficient variety. Be sure that cows have access to salt. See page 46 on mixing stock salt. If the fault is not with the feed the cows need tonic treatment and should have Conkey's Stock Tonic mixed with the regular feed as per directions on package.

EYES SORE Sore, inflamed eyes are best treated with Conkey's Eye Remedy applied as directed. If inflammation is very bad, treat frequently. This is very soothing and healing. Have barn well lighted, but avoid light directly in the eyes of any animal.

FOOT ROT—FOUL FOOT Caused by exposure to filthy floors or litter. The symptoms are lameness, then swelling of the foot and leg above the hoof, which comes to a head and breaks at the top of the cleft of the hoof and discharges a fetid, cheesy pus. Sometimes there is proud-flesh and the horn or claw separates from the hoof.

Treatment Wash the hoof clean in a solution of Conkey's Nox-i-cide Dip and Disinfectant, 2 teaspoonfuls in a pint of water. Cut away all loose horn, then apply a dressing of bran or flour mixed with the Nox-i-cide Dip and Disinfectant, 1 tablespoonful to 5 of water makes a good proportion for this dressing. Pack this well into the hoof and bandage well, or put the foot in a poultice boot (see cut, page 17). Be sure to keep the cattle on dry clean floors. During treatment keep the diet cooling and laxative. It is best to use Conkey's Stock Tonic in the feed to keep the system open.

GARGET— This may result from injury, overfeeding or infection
CAKED BAG through the teat opening, or directly from the blood circulation. Prompt treatment is necessary since the condition may become chronic, destroying the usefulness of the cow. (It does not pay to fuss with chronic garget). The trouble is common with cows just fresh, the congested state of the udder making it sensitive to cold or other injury when the cow is lying on a chilly, wet or hard floor. The milk stagnates, coagulates, and decomposition sets in. Sometimes pus or tumor-tissue forms, and often the milk-gland tissue in a part or a whole of the udder is permanently injured

Treatment Separate the sick cow as there is danger of infection. First relieve the feverish condition by a dose of salts (1 pound of Epsom salts in 3 pints of water), about one ounce ginger added would be beneficial. Give this dose once a week for three or four weeks as necessary. Foment the udder three times a day with hot water, dry gently with soft cloth or cotton and apply Conkey's Bag Relief, gently rubbing it in as the friction is also beneficial. Strip the milk away as often as possible, if necessary using a sterilized milking tube (see cut, page 155). Make the cow comfortable with plenty of clean dry bedding. Lighten the grain feed, and give Conkey's Stock Tonic in the feed as directed. See that the cow is not exposed to wet or chilling weather. If there are other complications so that the case does not immediately respond to above treatment, write us full description and we will advise you further. Such consultation and advice is free.

Prevention Disinfect the hands thoroughly in Nox-i-cide Dip and Disinfectant solution after handling a cow with garget, or your hands may spread the infection. Look sharply to stable conditions and if there has been an outbreak of garget in the herd go over the whole premises carefully, cleaning and disinfecting with Nox-i-cide Dip and Disinfectant as directed. If possible whitewash also. Keep the cows from wading in any filth or stagnant water.

GLANDULAR When these appear on udder, neck, etc., they can be
SWELLING quickly treated with Conkey's Pain Lotion. This preparation is more than a soothing lotion; it is an emollient and when applied externally is absorbed by the tissues and quickly heals them, or you can use Conkey's Absorbent, painting the lump as directed on package. If the animal is out of condition in any way, treat with Conkey's Stock Tonic.

HEAT Failure to come in heat should be treated first by Conkey's Stock Tonic, which is a special tonic for cows and builds up the health quickly. Increase the natural vigor of the animal and all natural functions follow. If the trouble is not due to low condition, and the animal still fails to come in heat, mix sulphate of iron, 4 ounces, powdered cantharides, 2 drams, and make this quantity up into 24 even doses. Give one dose twice a day in bran mash until effective.

INDIGESTION Loss of appetite, dull, unthriving condition should be met promptly. Indigestion from any cause strikes at the basis of health, and vigor, and profit in livestock.

Treatment If there is any fault with the feed correct it. The ration may not be properly balanced or it may be disagreeing with the cattle. Trouble may come from irregular feeding. Find out the cause and correct it. Having corrected the ration, mix with it Conkey's Stock Tonic as a tonic and conditioner. Begin with $\frac{1}{2}$ tablespoonful three times a day, gradually increasing the dose to 1 tablespoonful. This will tone up the weakened digestive organs, enable the animals to fully digest the nutrients in the feed and get all possible benefit from them. Cattle under heavy feeding for milk or beef production need help for digestion or functional disturbance is pretty sure to follow. A cow suffering from indigestion is in just the right low condition to succumb to any other disease that may come near her. Good digestion is necessary to keep up the body's power of resistance. Under natural conditions no tonic is needed. Under unnatural condition, i. e., heavy strain for production, assistance is absolutely necessary. Even vigorous animals need occasional tonic treatment. Hence the need for a conditioner. There has been much criticism of stock "foods," but no scientific man has ever assailed the principle back of Conkey's Stock Tonic, which is not a food but a medicine. It is safe for general use because it combines various vegetable tonics, and leaves no deposit in the system. It includes also vermifuge properties, since internal parasites are a common cause of indigestion and all farm animals need occasional vermifuge treatment. Its effect on the system is slightly laxative, which is necessary for animals under heavy feeding and light exercise. As a general tonic for heavy milking cows it can't be beat.

Prevention Occasional treatment with Stock Tonic is advised for all farm animals, as alterative, tonic treatment. As a general preventive of disorders we advise the continuous use with all farm animals of a mixture as follows: 90 pounds common barrel salt, 10 pounds Conkey's Stock Tonic, mix thoroughly, keep dry and let animals help themselves to it as there will then be no danger of overdosing. This should be before all the animals all the time. It makes the best possible stock salt at a cost of less than $2\frac{1}{2}$ cents per pound. It will keep them free from intestinal parasites, will increase appetite and exert a mild tonic effect.

LAMENESS If caused by inflammation between the claws of the hoof treat with Conkey's Nox-i-side Dip and Disinfectant as directed for Foul-foot and Foot-rot. Often when foul foot affects a fore foot it is mistaken for shoulder lameness on account of the swelling of the leg. Where soreness is present in the shoulder apply Conkey's Pain Lotion rubbing it in well and liberally. A soft hemp rope soaked in Nox-i-side Dip and Disinfectant solution will clean out and disinfect the cleft if drawn back and forth between the claws of the hoof.

LEUCHORREA— The symptom is a white, mucous, vaginal discharge.
WHITES Usually it is best to isolate the cow. Treat as follows:

Treatment Flush out the vagina once a day with a gallon of luke-warm water with $2\frac{1}{2}$ tablespoonfuls Nox-i-side Dip and Disinfectant. Treat daily for ten days, then if symptom continues treat every other day until the discharge stops entirely. Give internally Conkey's Stock Tonic, either mixing the dose with molasses and putting it on the back of the tongue, or adding it to the regular feed as directed on packages. The

condition described shows a functional weakness, and tonic treatment is necessary to build up the bodily vigor.

LICE The lice that affect cattle are blood-suckers, with narrow heads and long trunk-like sucking tubes. They leave the cattle when turned on grass, but the nits remain in the stable so that thorough cleaning and disinfecting of the premises is necessary to get rid of these pests.

Treatment Conkey's Nox-i-cide Dip and Disinfectant, mixed with 60 to 75 parts water, should be sprayed or applied with a brush as convenient. Begin at the head and work back over the animal, as the lice will try to get out of the way of the mixture and especially try to hide away in the ears. Go over the whole animal thoroughly and get at every part with the Nox-i-cide Dip and Disinfectant. It will certainly kill the lice, but the nits will hatch in 10 days and the animal should then be sprayed again. In cold weather the mixture should be made with warm water so as to avoid chilling, and the animal should be dried in the sunshine or a blanket put over it until thoroughly dried off. Instead of Nox-i-cide Dip and Disinfectant, Conkey's Lice Powder can be used, sifting it over the body thoroughly and rubbing it in so as to get to every part. With the powder there is no danger of chilling, but powder is more troublesome to apply over a large surface than Nox-i-cide Dip and Disinfectant. Treatment includes going over the barn or stable thoroughly, cleaning and disinfecting, and if possible whitewashing it.

LUMPY JAW This is a tumor-like growth, usually on the jaw but sometimes on the tongue (wooden-tongue), or it may affect the lungs. It is due to bacterial infection from the ray fungus, which exists naturally on spears of oats, awns of barley, thorns, etc. If the sensitive membrane of the mouth is cut by a bit of sharp forage, or if there is a scratch or sore of any sort in the mouth, or a bad tooth, the animal is easily infected by this ray fungus (in fact, inoculated) and symptoms of lumpy jaw may quickly follow. At first there is a lump on the jaw bone, or just back of the angle of the jaw, and in the early stages, while the bunch is soft and not attached to the bone itself, it is quite easy to cure. If neglected the lump continues to grow and when broken discharges thick, yellow matter. This discharge is contagious and if any of it drops on the food or the pasture other cattle are likely to be affected. We know of instances where three generations kept on the same pasture developed lumpy jaw. It usually starts with young cattle and in the last half of the year, when sharp grain and hay is fed and mouth-sores are more common.

Treatment As soon as the lump is discovered apply Conkey's Absorbent as directed, first cutting away the hair. If the lump is small this will absorb it. If the lump is large, this treatment will soften it so that it can be opened and cleaned out, and the tumor or abscess then packed with gauze or oakum saturated in Conkey's Absorbent. Or you can dress these fistulous tracts with a lotion made by dissolving copper sulphate (blue vitrol) 10 grains to one ounce of pure water. To hasten recovery internal treatment can be given as follows, with due attention to the special caution: Give potassium iodide, 2 to 3 drams daily, until the animal shows signs of scurf, loses appetite, droops, etc. Then stop for a few days, then commence again. Among veterinarians iodide of potash is considered a specific for this disease. It is successful in 3 out of 4 cases, but if no improvement follows after four or five weeks the treatment should be given up entirely. This drug should be used with full knowledge that it causes

emaciation, lessens the milk flow, and may cause abortion. The drug is fairly expensive, but it is estimated that 1 pound iodide of potash in 1 quart of water will be enough for a test of two month's treatment, giving $\frac{1}{2}$ ounce of this solution each night and morning. It can be put in the drinking water or given as a drench if care is taken to prevent strangling.

Prevention Use Conkey's Nox-i-cide Dip and Disinfectant liberally to kill all germs. Lump Jaw is very contagious. It will easily spread to the whole herd, or infect the stable or pasture, thus endangering animals that may occupy them later.

MANGE AND ITCH This is due usually to skin parasites, but itching may come from nervous eczema. The irritated condition of the skin and constant itching result in sore patches and loss of hair, and expose the animal to insect pests.

Treatment Apply Conkey's Dip and Disinfectant, using 1 part to 60 or 75 of water. Rub well into the skin with a stiff brush or use a sprayer. This will allay the intolerable itching immediately and will cure the disease by killing the germs. If the trouble is nervous eczema, treat the general condition, building up the body and cleaning the blood with Conkey's Stock Tonic mixed with the regular feed as directed. Mangy cattle always show unthrifty appearance, and a course of Conkey's Stock Tonic to improve the condition should always be a part of the treatment.

MILK FEVER Usually the best cow in the herd is the one attacked, for milk fever affects well-fed, heavy milkers, and especially those that have already calved several times. Symptoms usually start within two days after calving:

Symptoms Uneasiness, stamping the hind legs, muscles twitching, staggering, then the hind legs drag and finally the cow goes down in the characteristic attitude shown in the picture, with her head turned to the side, and a peculiar arch of the neck. The animal seems to be in a stupor and does not respond even when the ball of the eye is touched. The tongue seems paralyzed. The movements of the digestive organs apparently cease, and there is no dung or urine. The pulse ranges from 60 degrees to 150; the temperature may be below normal or as high as 105 F. When the cow is not treated death usually comes in a few days, and under the old treatment fully nine cases in every ten were lost. The new treatment is considered one of the most brilliant discoveries in modern veterinary knowledge for with it nine cases in every ten are successful. Just why it cures scientists do not understand as yet. But the following is the successful treatment:

Treatment Get a milking tube, a bulb and six feet of rubber tubing connected with a filtering chamber filled with sterile cotton, or use a tank of compressed oxygen. Strip the udder of milk, wash it thoroughly with a warm, antiseptic solution of Nox-i-cide Dip and Disinfectant, two teaspoonfuls to a pint of warm soft water, and also sterilize the milking

tube and the hands of the operator in some of this same strength solution. Treat each teat by inserting the sterile milking tube and slowly inflate until the air bubbles out. The above regular appliances can be bought for the purpose but in an emergency a satisfactory practical substitute is a bicycle pump connected with what is known as a wash bottle, which is nothing more than a tightly stoppered bottle, fitted with a long and a short glass tube, containing a strong Nox-i-cide solution, say 1 ounce of Nox-i-cide Dip and Disinfectant to 5 ounces of water, or about 2 tablespoonfuls to a glass of water. The air is sterilized by being pumped through this solution, since it enters the wash-bottle by a tube running below the surface of the antiseptic solution, and is forced through this wash before it can escape by the short tube. When the quarter being treated is fully distended, carefully withdraw the milking tube, pinching the teat to prevent the gas or air from escaping, and tie the end of the teat with a strip of $\frac{1}{2}$ inch muslin or tape. These tapes should not be left on long enough to destroy circulation but should come off in an hour or so. Keep the cow upright, and not on her side; if necessary prop with bolsters of chaff or straw. Do not rub the udder or attempt to milk it; leave it alone for 18 to 24 hours. In most cases the cow regains consciousness soon after the operation, rises and commences eating. She should then be fed very carefully, light, easily digested food, with Conkey's Stock Tonic mixed with it according to directions. For several days she should be milked very lightly, or milk fever conditions may come back.

Prevention Do not let a cow that is due to calve get into over-fat condition. Especially if it is her third calf, watch out. Have Conkey's Stock Tonic on hand and during the last six weeks before calving give the doses regularly as directed. This is the best possible treatment for preventing the various troubles so common at calving. Conkey's Stock Tonic keeps the organs active and the system open. It gives the cow vigor and makes her calf more sturdy. During the last weeks keep all grain out of the ration, but give bran every day. Let the cow exercise freely. A little extra care just at this critical time will often save heavy losses later.

MILKING TROUBLES

Bloody milk treat as suggested under that head. Leaking milk from the teat is simplest treated by putting on rubber bands 1 inch up from the end of the teat, tight enough to close the teat but not too tight for circulation. These bands can easily be removed when milking.

Hard milking is usually corrected by teat dilators or plugs, but as a last resort get a veterinarian to slit the teat, using a bistuary, properly sterilized for the operation.

Ropy or stringy milk is often traced to bacteria from bad water. Sometimes it is caused by indigestion, in which case physic the cow, change the feed and give $\frac{1}{2}$ ounce granular hyposulphite of soda in the feed or drinking water, night and morning. Look after the water supply, as it may cause infection. Disinfect the cow stable with Conkey's Nox-i-cide Dip and Disinfectant. Clean up, and if possible whitewash, and get more sunlight into the stable. Keep the udder washed clean, using Conkey's Nox-i-cide Dip and Disinfectant in the wash water.

Shrinking of the milk flow is usually due to faulty feeding. Read carefully pages 35-40. To insure full value from feed, mix with it Conkey's Stock

Bacterium lacti viscosus,
which cause stringy milk

Tonic according to directions. Increase the drinking water allowance and be sure it is of comfortable temperature for drinking. Do not let your cows fret, for any nervous, excited condition acts directly on the milk secretion. Keep your cows contented and happy. Keep them warm in winter, provide shade for them in summer, spray them with Conkey's Fly Knocker during the fly pest season, and they will make full use of their feed in a profitable milk-flow.

NAVEL ILL This is a common disease of calves, as also of colts. It is due to germ infection of the navel cord and may occur at birth or anytime before the navel is perfectly healed.

Symptoms Soreness and inflammation at the navel; swelling of the joints; lameness, sometimes paralysis of the forelegs or hind legs; the young animal is puny, fails to thrive, and usually indigestion and scours follow.

Prevention Proper treatment is prevention, for this trouble is preventable always. Before the cow calves, see that her stall is clean and thoroughly disinfected, using Conkey's Nox-i-cide Dip and Disinfectant in a solution of one part to fifty of water. Wet the navel for a week or ten days with Nox-i-cide solution, two teaspoonfuls in a pint of soft water, or 1 to 1,000 solution of corrosive sublimate.

PARALYSIS OF THE BOWELS This is sometimes very difficult to treat and a good veterinarian should be called as there may be complications. Obstinate constipation, acute indigestion, such as impaction of the rumen, or worms are some common causes; but there are many others. It may affect either calves or grown animals.

Symptoms The animal goes down and cannot get up, or can rise only in part. Usually it is the hind part that is affected.

Treatment The first thing is to give a brisk physic, such as Epsom salts, and inject 1 oz. of glycerine up the rectum. Then every four hours give warm flaxseed tea and thin oatmeal gruel containing stimulants. Give this in large quantities, as much as the animal will drink. For the stimulant, give 2 ounces of whiskey and $\frac{1}{2}$ teaspoonful of fluid extract of nux vomica. Increase the dose of nux vomica each day until the animal gets up of its own accord or until the muscles twitch involuntarily. Then go back to the original dose and continue as necessary. The urine should be drawn if the animal cannot pass it.

Prevention Paralysis due to digestive disorders can be prevented by the use of Conkey's Stock Tonic occasionally, mixed with the regular feed, according to directions. This treatment tones all the organs and keeps the system open. Conkey's Stock Tonic is especially advised for all dairy animals. It wards off many troubles to which heavy milkers are liable.

RINGWORM This is a skin disease due to a parasite which works in the hair follicles, causing bald spots. It is especially common in winter and spring. It usually attacks the face but may appear on any part of the body, as round bare patches covered with white or grayish scales and ringed around the edge with bristly, diseased hairs, which in turn fall out, so that the rings or spots are sometimes 2 or 3 inches in diameter. This trouble is contagious.

Treatment Scrub the affected parts well with Conkey's Nox-i-cide Dip and Disinfectant solution, two teaspoonfuls in a pint of water; then apply an ointment made by mixing 1 part Conkey's Absorbent with two parts lard. Put this on every two days until all scabs are gone. It is better to shave the hairs from the edge of the spot or pull them out with pincers, then apply the ointment. Clean up the quarters and disinfect thoroughly with Conkey's Nox-i-cide Dip and Disinfectant to prevent the spread of the disease.

Prevention Extra care in cleaning, disinfecting, etc., will entirely prevent any trouble with ring worm. The use of Conkey's Nox-i-cide Dip and Disinfectant in the cleaning water when animals are groomed will prevent any development of such skin disorders as ring worm, mange, itch, etc.

SCOURS This is a frequent trouble with calves, but it also affects grown cattle. With calves the trouble may be inherited, or from navel infection or, what is most common, some fault of feeding. With grown cattle the trouble is usually due to some simple error in feeding, such as giving too much salt after depriving them of it for a long time, or it may also come from any irritant in the bowels. Calf scours is a common ailment of calves brought up by hand and usually starts sometime in the first month. The scouring is a symptom rather than the disease itself, the real trouble being the irritated condition of the intestines from bad digestion. The diarrhea is thin and watery, and may be white, greenish or mixed with bloody mucous.

Treatment At the first sign give a dose of castor oil, 1 to 2 ounces in milk, dose according to the age of the calf. This is always the first step in checking the trouble. Then 3 times a day give one teaspoonful subnitrate of bismuth. Examine the feed, for the trouble is there. If skim milk is fed add 1 ounce of lime water to every pint of milk. Be sure that all milk fed the calves is at blood heat temperature, for cold milk is often the cause of scouring. If the calves are fed whole milk, be sure it is not too rich, and not from a cow too far along in lactation. Feed often and only a moderate amount at a time. Be very sure that all utensils are thoroughly clean. A little Nox-i-cide Dip and Disinfectant in the wash water will disinfect them thoroughly. Do not add grain or calf meal of any sort too soon, as the digestive juices are not ready for grain in the first few weeks. When grain is added, avoid using screened oats, as the hulls are irritating. A little blood meal fed with corn meal, makes a good substitute. Soon as the bowel movements check give the calves $\frac{1}{4}$ table-spoonful Conkey's Stock Tonic as directed and continue treatment for about two weeks or until the animal gets a good start.

White scours, appearing the first or second day after birth, with great weakness and dullness of the calf, is a contagious disease and usually is quickly fatal. It is due to navel infection and the treatment is therefore preventive as follows: Let the cow calve in a separate clean stable, or disinfect the quarters very thoroughly with Conkey's Nox-i-cide Dip and Disinfectant, $\frac{1}{2}$ pint to each gallon of water. Some of the same strength solution should be used to wash off the hind quarters of the cow and at birth the cord should be tied with sterile string or tape (sterilize by soaking in a cup of water with 1 teaspoonful of Nox-i-cide Dip and Disinfectant) and for a week or ten days, until it heals, the stump should be wet each day with this Nox-i-cide solution.

SLOBBERING First examine the teeth and tongue. A split, sharp or diseased tooth may cause the irritation. Or the tongue may show enlargement and irritation, the so-called "wooden-tongue;" it may show the skin stripped off in places. If the teeth are diseased, give them attention. If the tongue is affected, treat the places with tincture of iodine once daily, after first cauterizing with lunar caustic. Then give one dram iodid of potash twice a day, noting the caution given under treatment for Lump Jaw. If neither teeth nor tongue are at fault, treat for stomach derangement, and give Conkey's Stock Tonic in the feed according to directions.

SORE MOUTH For this symptom, swab the mouth with Conkey's Nox-i-cide Dip and Disinfectant solution, $\frac{1}{2}$ teaspoonful to a cup of water. If the tongue shows symptoms of "wooden tongue" (a rounded, hard swelling) due to actinomycosis, that is infection from ray fungus, (see Lump Jaw), treat as described above, using tincture of iodine, and night and morning a dram of iodid of potash in the drinking water for ten days. Note the cautions as to the use of iodid of potash, page 149 under Lump Jaw.

SORES Treat all such places with Conkey's Healing Powder. If there are lumps or bunches filled with pus, first open and let this matter out, then swab with Nox-i-cide solution, 1 teaspoonful of Conkey's Nox-i-cide Dip and Disinfectant to a cup of water. Treat once a day until thoroughly healed. Never neglect sores as they are liable to infection with disease germs or maggots and frequently cause very serious trouble.

STERILITY In a very large proportion of cases this trouble can be successfully treated in cows as follows: First, before breeding, make sure that the animal is in good muscular condition, not too fat, but not too lean; that is, see that the cow has proper vitality. To insure this vitality we advise systematic treatment with Conkey's Stock Tonic, mixing it with the regular feed as directed. It will make the animal thrifty, if the trouble has been faulty digestion, as it will insure digestion, and it will produce a healthy appetite if the animal has been off feed or run down in any way. In short, first make sure that the animal is in good breeding condition. If she still fails to breed then use the simple yeast or soda treatment, to correct unnatural acidity of the womb. This treatment is very successful as follows: Two or three times a week flush out the vagina with a gallon of luke-warm water, containing $\frac{1}{2}$ oz. sodium bicarbonate (or use the yeast treatment described on page 116. An hour before service have a veterinarian or other competent operator open the neck of the womb and again inject the soda solution. If the cow fails to conceive, repeat above treatment.

SWELLING Reduce ordinary swellings with Conkey's Absorbent, rubbing it in freely. Or, Conkey's Warming Liniment could be used to advantage, but if a stubborn case, use Conkey's Absorbent. Soft dropsical swellings sometimes appear on different parts of the body and are a symptom, sometimes of tuberculosis, sometimes of general debility and run-down condition. If the trouble is not tuberculosis, but due to bloodlessness and general poor condition, put the animal on generous nutritious feed and mix with the feed Conkey's Stock Tonic according to directions. This treatment will build up the animal from the inside out, which is far more scientific than trying to treat from the outside in.

TEATS Closed or obstructed teats usually need the attention of a veterinarian or other attendant competent to slit the teat in four different directions, using a regular instrument for the purpose, the teat bistuary (see cut) sterilized in Nox-i-cide solution, 1 teaspoonful Conkey's Nox-i-cide Dip and Disinfectant to a cup of water. Perform this operation of cutting while the cow is in milk, then to keep the opening from closing strip away a little of the milk frequently.

1. Teat bistuary 2. Milking tube

Deranged teats sometimes need only the use of a sterilized milking tube (see cut) to draw off the milk, the derangement disappearing in time. In such cases, or where the teat seems to be shrinking, use Conkey's Bag Relief, rubbing it into the affected quarter. In some cases special dosing with one dram of iodid of potash two times a day, in bran mash, will correct the condition in from two to four weeks, but if not, there is no use to continue the treatment.

Leaking or punctured teats can be closed by painting the leak with successive coats of flexible collodion. Or the edges of the hole are cut or scarified, then drawn together like the edges of an ordinary wound and stitched, when of course, they heal over.

Sores on the end of the teat can be cured by dusting on Conkey's Healing Powder. This is a bad place to heal a sore so use the powder persistently. Some times such places are treated by burning with nitrate of silver, two or three times a week.

TUBERCULOSIS General unthriftiness, with or without cough, may indicate tuberculosis. All such animals should be tested. A "test" sometimes goes wrong—we all know that—but short of cutting the suspected animal open, testing is the only means we have for determining this condition. In testing for tuberculosis, be sure that the cow is otherwise in normal condition, or the test will mean nothing. If a second test is made, do not attempt it too soon after the first, for the animal will fail to re-act, even though tubercular. Treatment for tuberculosis is not practical, as no product of the animal affected would be safe for human food.

Prevention Prevention is entirely possible. The presence or the fear of tuberculosis—and the fear of it is always with the cattle owner—calls for good sanitary precautions—plenty of fresh air in the stables, regular removal of all filth or dust accumulations, and thorough disinfecting with Conkey's Nox-i-cide Dip and Disinfectant, the combination general purpose article. Tuberculosis is one of the numerous diseases which are easily preventable but well nigh incurable if once they get a headway. Cows are especially liable to tuberculosis on account of the functional strain on them for heavy milk production. It is the heavy milkers that seem most liable, and it is noticed that those with narrow chests, long legs, long neck, and ears and horns set close together seem to be the easiest victims. As indicated above, close, badly-aired stables greatly increase the danger.

WARBLES These are bots or tumors, that is small lumps under the skin, usually along the back. They are caused by the larvae or grub of the bot-fly, which in summer season stings the animal on the back and deposits an egg at each sting. By early spring, these grub have developed into sizeable worms. Each lump or tumor has a hole in its center, through which the bot or warble may be seen.

Treatment As soon as you find these lumps or tumors, press the grub out with the fingers, then apply a salve made up of three parts lard and one part Conkey's Nox-i-cide Dip and Disinfectant. If more convenient, spraying with Nox-i-cide solution, one part to 100 of water will prove effective. Be sure to press out the grub, for if killed but left in the tumor they are liable to fester, and in any case destroy the value of the hide.

Prevention Spray cattle in fly time with Conkey's Fly Knocker. This will keep the bot or gad fly from alighting on the animals.

Caution Some salves, anti-parasite mixtures, etc., advertised for this purpose are in the nature of mercurial ointments, or contain other poisonous matter. While effective for killing the grubs, they are very dangerous, as the cows are liable to lick each other's backs. We guarantee Conkey's Nox-i-cide Dip and Disinfectant and Conkey's Fly Knocker not to injure the animal in any way and that the above treatment will rid the hide of these destructive pests.

WARTS These may appear on any part of the body, and where they can be clipped, that is the simplest treatment, but touch each spot with nitrate of silver and then applying Conkey's Healing Salve until thoroughly healed or mix up an ointment from common lard, 3 parts and 1 part Nox-i-cide Dip and Disinfectant. Where the wart has a neck, a good plan is to strangle the wart by tying a thread or cord around it as close as possible to the base. When the wart sloughs off apply a little solution of chloride of antimony, every third day until the sore part is a little lower than the skin. Heal with Conkey's Healing Powder as directed. Warts on the teat can usually be treated very simply by rubbing with castor oil once or twice a day. Olive oil is also good. If necessary to clip warts on the udder, treat only a few at a time to avoid too much irritation and inflammation.

SHEEP

THE United States will soon be the greatest wool producing country in the world.

She already grows more than 300,000,000 pounds a year, fleece and pulled; and imports about as much again for her own use.

300,000,000 pounds! And yet not enough. Twenty years ago we thought 70,000,000 pounds something to brag of.

She exports a little, but lets other countries supply the great world market. Why does she do it?

WHO WEARS CLOTHES? Did you ever stop to think that after all, of all the people in this world, only one-third are fully clothed? And of that one-third which we speak of as civilized and fully clothed, there are varying classes, but chiefly two classes: one class which has all it needs, and another class, which we called the "other half," which doesn't have all it needs. Have you all you need, say in the matter of clothes? Could you use more wool at present? Do you think the sheep industry can keep up with the world's needed supply?

WHAT WE NEED Wool, wool, wool! We must have it—more of it—and more grades and varieties of it. Bigger flocks! Better care of sheep and fleece! More intelligent breeding! Who knows but we may develop before long with this easily modeled animal entirely new breeds for new and special purposes?

THE WORLD'S MARKET Why look to Europe and Australia for the world's big wool supply? Why look to England for the lustrous Leicester wool our manufacturers of dress goods are needing? Why pay high prices to France for French Merino? Why let the old world, with the highest priced land in existence, give us object lessons in profitable sheep raising?

MADE IN AMERICA We have in America today—made in America—the best sheep of its kind in all the world—the American Merino.

A LITTLE HISTORY The sheep in America has back of it as long a history as the United States themselves; and back of that, 2000 years back, if you will go that far, the painstaking care of kings, and breeders wiser than kings. In fact, you can't go back so far in history that you do not find man there with his sheep. They are the oldest of domestic animals. Even primitive man found them useful. Among all races we find them as an early standard of wealth. The sheep is the "animal with the golden hoofs," the giver of the "golden fleece." It was man's most precious early possession, and the highest thing he could offer in sacrificial worship.

Sheep were the first civilizers, by their very timidity helping to quell the brute in savage human nature—requiring to be led, not driven—loving the gentle shepherd and depending upon him wholly.

This timid animal proved hardy by nature, however, and adapted itself to suit man's changing conditions. In the absence of shelter it grew wool for protection, which man could shear in mild season. If given little for feed it fed itself, "rustling" on free range. If given plenty it turned that plenty into juicy flesh to satisfy man's lusty hunger. Preferring a temperate climate, it suited itself to the shepherd's nomadic nature and adapted itself to every climate and every livable altitude. With the coming of empires and civilized markets the shepherd's sheep kept pace, adapting themselves to fill his various needs and luxuries.

MUTTON OR WOOL? Today then we have two great tendencies of sheep, two great classes: the (1) mutton, and the (2) wool varieties.

Moreover, every mutton breed produces also some valuable wool, and every wool breed some mutton. While tending, for special excellence, one way or the other, the sheep is a practical sort of creature and always results in a "dual-purpose."

BREEDING CAN DO IT Now the world has need of many and various kinds of wool. Sheep respond to every effort of the breeder and today there is wool of a kind to suit every different demand for manufacture. There are long-wooled breeds, there are medium-wooled breeds and fine-wooled breeds, with every imaginable cross and mixture. If manufacturers want any different kind, let them say so any day and in a very few sheep generations the breeders will "deliver the goods" according to order.

So much for science and so much for the plastic nature of the sheep in breeding.

LONG-WOOLED BREEDS Leicesters, Lincolns and Cotswolds are the chief of the long-wooled breeds.

LEICESTERS The long-wooled breeds are the most varied, and have the greatest average value. They are usually hornless, white-faced animals, somewhat coarse in flesh and sluggish in movement. They are mostly of English origin, where the breeder Bakewell did much good work to develop them in the last half of the 18th century. Of the long-wooled breeds the Leicesters were the first to show results from intelligent breeding. They are still largely used for grading up flocks. Leicesters

are hornless and have curly lustrous wool 7 inches to 8 inches long. Their bodies are small, well shaped, thick and deep, soon grown and easy to fatten for market.

LINCOLNS From these the Lincolns are distinguished by greater size and weight, with wool even longer. Sometimes strands measure all of 21 inches. Lincolns are much used in this country, in the northwest especially, for crossing. They are just about the longest legged, longest carcassed and longest wooled sheep known. These exaggerated characteristics make them so useful in crossing.

Leicester, Cotswold, Lincoln—The chief Long Wool Breeds

COTSWOLDS Cotswolds have good fleece, but not so long and not so heavy as the Lincoln pelt. The flowing forelock is a prominent mark of the breed. Cotswolds have wonderful hardihood.

MEDIUM-WOOLED BREEDS The various Downs are the medium-wooled breeds, also Shropshire, Dorset horned, etc.

Medium Wool—Oxford

Fine Wool—Merino

Medium Wool—Southdown

SHROPSHIRE-DORSET-DOWN Medium-wooled breeds are for the most part hornless and dark faced, though the Dorset Horned sheep are of the medium-wool class. Southdown and Shropshire are good examples of medium-wool breeds. The Southdown was developed by selection until a fine short-wooled type was developed, with close-grained tender flesh, making the type good for mutton. The only thing against them is that they are small. Shropshires are larger and heavier; but in fleece are medium fine and fairly long. Shropshires are bald like the Suffolk, but are wool capped and have fetlocks. Size and fleece they get from the Lincolns and Cotswold cross in their blood with Southdowns. They are our chief mutton breed.

FINE WOOLED BREEDS —MERINOS

Last, but in any classification from the wool-growing standpoint, first of all, come the fine-wooled varieties, practically all of them

some shape or form of Merino.

MERINO HISTORY

All of these have been developed from the old Spanish Merino, a breed long held in monopoly by the wily kings and clergy of Spain in days of Spanish glory. It was by this breed that Spain for so long controlled the fine wool trade of the world. In fact none were permitted to leave the kingdom until 1765, when 300 were sent to Saxony, founding there the Saxon Merinos. The English climate was a little hard on Merino wool; so that the Merino there deteriorated. But from England they were taken to Australia and New Zealand, with what increase and development the whole world knows. Is it too much to say that it was to these sheep Great Britain owed in large part the wonderful development of her penal colony into her greatest colonial empire? Australia today produces in wool 756,690,163 lbs., the mother country less than 134,000,000.

No wonder the Merino "pulls the wool over our eyes:" although as mutton the Merino is distinctly inferior. Meanwhile, the Spanish Merinos sent to France and carefully bred there on different lines, have produced

Fine Type of Rambouillet Ram

our present day Rambouillet or French Merino, regarded now as a distinct breed and certainly excellent for mutton as well as for its fine grade of wool.

MUTTON TYPE

In mutton breeds we look for depth, length and regularity of form, with shoulders and hips well molded, fleece even. Of all mutton types the Lincoln is largest and heaviest. That is why Lincolns are so valuable for grading a flock up for mutton. This breed is the earliest maturing of any, and yields a 9 to 11 lb. fleece,—a good investment for the intensive farmer. Dorsets, which with Cheviots

and Suffolks are included among the medium wool varieties, are remarkable for fertility, and breed any time of year. This makes the Dorset excellent for raising winter lambs in time for market just after the holiday poultry season. This is a profitable industry always. The winter season is hard on breeding ewes and the lambs; but against that is the "better risk" to the breeder, in that there is no danger from stomach worms which make a gamble of profit in summer flocks, unless the stockman is exceedingly careful in providing new pastures.

WOOL TYPE The wool sheep, that is the Merino varieties, are the lightest of all the improved breeds; also slow to fatten, and slow to mature. On the other hand they are good grazers, will "rustle" for themselves when necessary, and adapt themselves to any climate. But the French Merino, the Rambouillet, as stated above, has been differently bred and so matures much earlier. It certainly is a good breed both for wool and for mutton.

THE AMERICAN INDUSTRY As early as 1565 Spanish sheep were introduced to this country when Menendez the Spanish explorer founded the town of St. Augustine in Florida, the oldest city in the United States. All through Colonial times we find some attention given the sheep industry. Sheep were imported into Jamestown in 1609,

A Fine Type of American Merino

when the settlement was only two years old; but on account of wolves and other causes the flocks did not thrive and there were not more than three thousand all told a half century later. The Dutch, in New York colony, made importations as early as 1625. William Penn introduced them in his colony of Pennsylvania along in 1683; and Pennsylvania early encouraged the industry by fairs. The Swedes, in New Jersey, brought sheep with them; and as early as 1700 their flocks were plentifully sprinkled through that colony.

But worse than wolves, worse than the hardships of Colonial settlements in winter, were the jealous taxes levied so unjustly by the Mother

Country, England. The colonists were first of all aiming to get mutton from their sheep. They could not get any pure stock at first, and only mixed varieties were brought in; but these gave a very satisfactory quality of meat, and along with it a very fair wool production. Soon the colonists were anxious to weave their own shearings. But the anger of the Mother Country crashed down upon them at this display of rivalry with the looms of old England. England wanted a monopoly of all the trade from her colonies; and, like a blood-sucking parasite, she fastened on wool manufacturing. Hard laws were passed, unjust restrictions. It was no wonder that the spirit of rebellion found so many united for it. In 1776 the colonists with one heart and purpose pushed forward to success against all obstacles the American Revolution.

THE START IN CALIFORNIA

Meanwhile on the western slope, undisturbed by history-making east of the Alleghanies, the Spanish priests quietly established their long chain of missions or church settlements for the making of "good" Indians out of "bad" Indians; set out their vineyards and spread their countless flocks over the ranges. The first Spanish sheep were introduced in 1773 and soon seventeen establishments were in operation for sheep husbandry—all the property of the missions—extending in a line from San Diego as far north as San Fran-

Telling a "good mouth"—1 to 4 years

cisco, with a total of no less than 1,003,970 sheep. In addition to this we can estimate that fully as many sheep were owned by individual "rancheros," chiefly Spanish grandees who had cast their lot with the new country. This is a part of history we hear little of in the school books. But quietly, steadily, the Pacific settlements were making progress, with the "good" Indians to help them and only the "bad" Indians (i. e., unconverted by missions) to oppose their mastery of that country's rich resources.

NOT "ALL WOOL"

Humphreys, United States Minister to Spain, in 1802 brought home from that country 200 Spanish Merinos. These and other importations immediately following were all of the finest Spanish flocks. Before long 3,850 head of Spanish Merinos could be counted among the enterprising New England and New York breeders; and the famous Spanish Merino was successfully transplanted to our Eastern states. Up to 1870 Merinos made up four-fifths of the sheep raised in this country. A tendency to mutton development has set in, however, for with growing cities more and more mutton is needed. Thus today we find that East of the Mississippi the coarse wool, or medium wool, mutton breeds come up to the market requirements. The profitable plan in the Eastern section is to market wethers at an early age and to fatten the old ewes for mutton just as soon as they have passed their first usefulness for breeding. With the East growing mainly for mutton and for home consumption, there is practically no competition with the Western rangers, who look for wool rather than finest quality of mutton. In the southwest Merinos still hold their own because of their "rustling" ability

But in the northwest the rangers practice crossing continually, in order to maintain a general purpose medium fine wool sheep, shearing 7 to 8 lbs., and still with good mutton qualities. In breeding back and forth as is necessary, they alternate Lincolns and Cotswold rams with Merinos. Lincolns and Cotswold breeds are large of body, somewhat coarse in wool; but they keep the stock from getting too fine for mutton purposes. Care must be exercised, however, to see that the wool does not get too coarse for best market production. The western ranchers never sacrifice good wool for mutton.

Today wool is firm, close to 30c per lb. in the middle west. The tariff protection (1910) is 11c and 12c. Our last yearly statistics showed 328,110,749 lbs. output, with demand much larger. The market for mutton and lamb increases all the time, and is bound to keep growing so long as we have growing cities.

MINUS THE CORNBELT

Sheep raising in the United States flourishes mainly in the middle and far west, leaving out the cornbelt. The 1900 census showed 62,000,000 head with 55% of these on western ranges. Montana leads with 6,000,000; Wyoming, New Mexico,

Shropshire Ram and Ewe

Ohio, Utah, Idaho, Oregon, California, rank in the order named. Roughly the order of growth may be judged from the Union Stock Yards receipts at Chicago for different years as follows:

1885	1,000,000
1890	2,000,000
1900	3,500,000
1902	4,500,000 (Value \$19,000,000)

A conservative estimate for present production would be 18,500,000 head annually, with a carcass value of, on the average, \$4.25.

FARM OR RANGE This is the sheep situation. When it comes down to the individual problem of management a man must consider whether his sheep are to be put on farms or left to range as in

our great western sections. But even in the west conditions are changing and the great herds of 60,000 and up are rapidly giving way before general farming. Sheep thrive on scant herbage, and do well in outdoor conditions. Such countries as South America, especially Argentine, Australia, New Zealand and our own Western America are well adapted to sheep raising. It is still common in the west to meet enormous flocks of "rustlers." One herder with dogs will often have in charge 1,800 to 3,000 sheep. In this way expenses are small, while probable profits are enormous. But the game is a gamble in one sense: devastation can easily overtake such a flock from pestilence, drought or storm. State laws are growing in force so there is less danger of the first sort. Proper dipping will guard the flock from parasites or disease. But drought and storm are beyond any ranchman's control. He simply takes his chances. Sometimes when the summer has been dry and the stockman knows it will be hard to find all-winter range he can still ship east and have his flock fattened for market. These are the "feeders" we find so often in the cornbelt; but they are transient, and don't show up in the census, although they are there and the cornbelt growers of fattening grain are "there" with resulting profits.

ON THE FARM The whole problem is a different one for the sheep man on the established farm. If you want to see some really tremendous profits just give these professional "rustlers," i. e., sheep, half a show on fertile farms as our British and European cousins have been doing. In fact you have no business with a good fertile farm unless you see the business advantage in adding a flock of sheep to make those acres more productive.

ALWAYS TWO PROFITS The sheep industry is not like some other live-stock industries. With sheep you just naturally can't get away from some sort of "dual-purpose." You can't grow wool without some mutton; and you can't grow good mutton without a pretty good growth of fleece. The fleece shows the good natural well-nourished condition of the animal. Of course this excess of condition will tend to show more as wool or mutton according to the breed's characteristics. But the general truth is clear.

SHEEP GOOD SECURITY The sheep industry calls for a trifling outlay if you begin on a small scale. Profits are pretty certain. Banks in the northwest have always looked upon sheep raising as good security. Many a western sheep fortune has come from a flock bought at the start with borrowed money. Sheep are hardy by nature; good at roughing it; breed easily so there is quick increase. Their wants are few, easy to understand; their ailments largely preventable, because mostly of a parasitic nature.

AGAIN, WHY? Ohio and Michigan are famed for their sheep. But it's mostly far east or far west you find them, with very few in the thriving cornbelt, except as transient feeders. Why's that? You won't find the answer anywhere in this book; but old sheepmen shut their eyes and say it's a good business to grow into, rather than to go into, feet first. But their pockets jingle while they speak. So you better think it over.

SCAVENGERS? YEP! AND THEN SOME While it's true that sheep are "rustlers" and can make a living where even a colt would starve, they are good for something more than clearing weeds and brush-land. Make a start with a few sheep, learning as you go. Or if you now have a few, chiefly as scavengers, on your farm, go to it this

year and see if there isn't room for at least 100% more. You'll get fleece, lambs and mutton for your trouble.

COST TO FEED

50 sheep\$100
60 lambs 52

Total\$152

Profit in wool

400 lbs. at 23c. \$ 92

60 lambs \$6..... 360

Total\$452

Less feed 152

Profit\$300

One man in the central west got 49 ewes to start with, and 1 good ram, making a flock of 50. From these he raised 60 lambs, which is a low estimate. These 60 lambs he sold at \$6.00 per head, netting for lambs \$360. From his 50 sheep he sheared 400 lbs. of wool, which is a fair estimate. This he sold at the then market price of 23c, netting for wool \$92.00. It cost him for grain and pasture for the flock of 50 sheep \$100, grain for the lambs \$52. His total expense (not counting labor) was \$152. He still had his flock of sheep, and in the bank an extra \$300.

(Actual figures "E. K." in Indiana Farmer.)

HOME GROWN FEED— "Side Issue" Profit \$677

Here's another man with a 320 acre farm, raising grain, with sheep just as a "side issue." From 80 ewes he clipped wool to the tune of \$120. From 80 ewes he raised 80 lambs, which he fattened for market on screenings, weight 90 lbs. at 6c per lb., the 80 lambs bringing \$432. This careful farmer found also evenly distributed over his farm the most valuable of all live-stock manure, which he estimated at 25 tons and \$5 a ton, making an increase to his land of \$125 value. Friend E. K. didn't give his flock any credit for distributing fertilizer; but we know he got the benefit on his land. There can't be any real farming without this valuable return to the soil; and scientists all give credit to sheep for giving back 80% of what they get out of it in grazing.

HOW TO START

For the average farmer 10 or a dozen ewes will be best to start with, purchased from good healthy nearby stock. Then he can increase from year to year until his flock is of the size that he can best handle. Let him combine with some neighbor to market his wool and lambs—until such time as he has 50 or 60 ewes. The wool and lambs from this size flock can always be marketed to advantage. To end with success start out with vigorous lambs. Select good strong mothers for the breeding flock,—good milkers and such as have a dense fleece that will give the breeding animal plenty of protection. It is well not to keep a breeding ewe after she is too old to make thrifty gains in return for feed and care. In selecting ewes, pick out those that run quickly and show physical exuberance. It's good to see a young ewe that gives an occasional leap up into the air just because she feels like it. Don't sell her. She'll bring vigorous offspring. Never sell anyone your best—the best is only good enough for you. Sell your poorest. Look over the flock and cull the ewes showing poor teeth or marks of poor breeding, or those you know are not good milkers at lambing. Remember this is where it's true that most of the labor in caring for sheep is head work, not with hands.

GOING UP!

When you've started right keep on going. Stick to the breed you selected. You can grade up, up. It doesn't take long to breed a flock to a high standard—mostly headwork again, not physical labor,

BREED OUT THE FAULTS Start with vigorous stock. Then use only the best of rams. Put as much value as you can into the ram,—not always a highly fitted prize winner, pampered and perhaps weakened in vigor in order to make a good outside show. But don't stop until you can get what you consider the best ram in your parts for breeding purposes. Every sheep has a fault. But when your whole flock shows up some uniform fault select the ram you need and correct it.

Read page 6 again. Breeding is not an "exact science," but there is a fair degree of mathematical certainty in it. So, breed in good qualities, and breed out the faults that cheapen your flock.

RAM AND EWES Good breeders estimate from 30 to 50 ewes to each ram, depending on individual quality and also condition. No matter how high the ram's individual quality he must also be in perfect physical condition, well fed and vigorous. A tonic and appetizer in the feed, like Conkey's Stock Vigor, is ideal for putting and keeping the animal in just the right fettle.

HOW TO TELL A GOOD RAM He must have a bold carriage, and in his face a strong, "sirey" look. Muzzle and nose will be broad, showing a good breather and feeder. A short powerful neck with deep, roomy chest; back broad, strong looking; broad and deep loins, supporting plenty of best cut of meat; strong legs, not stilty. You don't want to see the landscape under your sheep, that space might just as well be mutton.

GOOD LAMBS Strong lambs come from care of the winter flock. Good winter shelter, not too warm but dry and out of the wind, with plenty of bedding and plenty of ventilation,—this sums up the first big factor in the sheepman's success. The second is proper attention to the ewes when lambing.

LAMBING As with all farm animals the flock master will watch the breeding animals; have a record of each (ewes require 150 days gestation) and when time for delivering their young, will separate each animal and keep on the alert to give any necessary attention. Loss of lambs has been estimated to be due mainly to cold (40%) and lack of milk (30%). Provide good shelter for the ewes at lambing. And in selecting breeding ewes look for good mothers,—not the short pudgy type but rather rangy, good feeders, good milkers, and fitted out with a dense fleece, as this will insure the breeding animals protection. For a month before, feed the ewes rich protein food, see section on Feeds and Feeding, especially pages 50 and 51. Make them take plenty of exercise. Clover hay and corn silage make good roughage. For concentrated food, oats, corn and bran are better mixed than when fed alone. If you must feed only one, oats are best. Corn tends to fat, makes weak lambs, and little milk.

SAVING LAMBS If a lamb is chilled it can be saved by plunging in warm water, wiping dry with a rough towel and putting in a nice warm place, then giving it warm milk. For the June market

lambs are best dropped about the middle of February to March 1st, when the backbone of winter is broken. There is less danger of loss of lambs in mild weather but of course big profits come from winter or "hot-house" lambs,—worth as high as \$15.00 in January, but in May worth about \$3.00. Dorsets are the star winter lamb performers; for they are the most fertile breed that we know, produce many twins and will breed almost any time of the year; so that the flock owner can meet any market. Have you studied the English system of "flushing" before breeding? See page 51.

STARTING LAMBS Lambs must get a good start with their dams if ever they are to show big profit. Lack of milk is one cause of great loss of lambs. No after feeding will make up if they fail to thrive at the start. Lambs orphaned or "not owned" by their mothers can be given good foster mothers; or if necessary brought up by hand, on cow's milk in a nursing bottle.

DOCKING— Lambs are docked when a few days or a week old, and **CASTRATING** the male lambs castrated then, as wounds to the tender flesh heal quickly without much pain to the animal. The knife used should be dipped in a solution of Conkey's Nox-i-side Dip and Disinfectant to guard against any infection.

WEANED LAMBS Best gains come where the little lambs are accustomed to grain meal from the start, so that weaning is easily accomplished. Lambs weaned in summer should always have untouched pasture so as to avoid infection from stomach worms. Stomach worms are sure to follow if old sheep and young lambs both have the same pasture. Read page 185. Also read carefully page 50 on feeding lambs.

MARKET CLASSES Mutton: Each graded according to (1) quality, (2) condition, (3) weight, and (4) form—

Lambs
Yearlings
Wethers
Ewes
Bucks
Stags

Feeders: Almost exclusively Western; graded for (1) quality, (2) form, (3) condition, and (4) weight—

Lambs
Yearlings
Wethers
Ewes

Breeders: Graded according to (1) age, (2) constitution, (3) form, (4) breeding, (5) quality, and (6) condition—
Bucks.

MARKETING It won't pay to send skinny, half-fat lambs to market. Besides, it's easy to get lambs fat, and 30 lbs. nice and plump, rightly "dressed," and with plenty of caul to protect it, will show bigger money than 40 lbs. lean in flesh, small kidneys, and with a scanty, veil-like caul for covering. So don't fail to finish your lambs properly for market. It's this extra care just in the finishing that counts. For instance, the rest of the flock will do nicely through the winter even if they don't get grain in their ration. But put plenty of grain-fat on your lambs if they are intended for that early market. Silage and hay alone won't make a lamb that tops the market. But silage with alfalfa or clover hay and grain will do it. Silage is useful for fattening some. But don't use in too large amount. Practical feeders say $2\frac{1}{2}$ lbs. per day is the limit. It is possible to fatten on a cheap ration without grain; for instance, alfalfa, turnips and oil-meal. But read the section on Feeds and Feeding.

KEEP YOUR BEST Don't market your fine and fat ewe lamb. Keep her even if you do miss a good price. You'll be glad you saved her from the block when she is two years old and you begin to get your reward in other lambkin duplicates of herself. It would be different if it were easy to go out and get good ewes for breeding—but you can't always tell just what you are getting. Always look over the flock before winter comes, and cull out the old fat sheep and let the butcher have them while their weight is up. Always keep your best.

The Wool Side of Sheep

A PERFECT FLEECE A perfect fleece! It is a certificate of health and an advertisement of the sheepman's good care and management. Even growth means even management. And the sheep isn't the only one who gains or loses!

A SHEEP'S DIARY He keeps it every day; and whatever the record, he can never erase it. He uses it chiefly to tell his troubles, setting down every hardship, every period of suffering, every blight of season or disease. Anyone who knows can read it, and the expert wool-buyer always knows the language. See him test the wool of your sheep, passing his hand over it for closeness and evenness, stretching a lock and looking to see it "break." No need to look under the microscope. The story is told; and if there are weak spots in the fibre of the wool, the fleece is put aside as worthless or given only a poor grade. That "break" has told the story.

"BREAKS" ARE WEAK SPOTS Each fibre of wool is the sheep's diary. As it grows out of the skin it registers the animal's condition. In its actual structure it changes with health or disease. A "break" or weak spot shows hardship. Going without water for several days in hot dry weather will every time show this "break" in the staple.

Your sheep's back isn't all one grade of wool—far from it. It must be sorted. Only the wool from the center sides is really first choice; at the top and back it is coarser, grading back to the breach, where it is very much inferior though better than the fleece on belly and brisket. The leg wool is often useless. Study the diagrams carefully.

Look well to the fleece of the ram with which you cross your flock. The wool-buyer running his hand over the fleece will detect every difference.

Grades of Fleece—(1) As roughly graded on the hoof. (2) As carefully graded on the wool-sorters' diagram.

Evenness of size and appearance is mostly a matter of feeding; but careful sorting of the flock before marketing will help to make this better, more "uniform" appearance. You can do this if you make a single file lane or alley, with a shunting gate; so that you can easily pass the animals along into one compartment or another, according as you wish to examine them. Climate affects the fleece. Very hard winters make the wool coarse and more irregular, with a short undergrowth. Constant wetting dries out the "yolk," and the wool lacks life and lustre. Wash the sheep one week or two before shearing. It will then be clean but regain sufficient "yolk" for good market condition. Best not shear the little lamb, though some do it. Better let it have its full unshorn fleece to temper its first winter. Besides, the fleece of the yearling is always the best.

(1) A lock of wool, (2, 3) sharp hooks which give strength and density to the spun and woven thread, (4) kink or twist in fibre, which makes possible a long, strong thread.

Healthy and unhealthy fibres of wool. Notice the tell-tale "break."

Fleece is frequently injured by the kind of preparations used in dipping. Some old-fashioned "safe" dips are exceedingly dangerous. Read carefully page 173 about Dips and Dipping. Conkey's Nox-i-cide Dip and Disinfectant, see page 207, cures scabs and exterminates the sheep tick, does not curl, burn or stain the wool, as do lime, arsenic and tobacco preparations.

Fleeces have always been a large part of the merchandising of the world. It is the spiral fibre or twist that gives the wool its wonderful

value. And the finer the wool the more it is **serrated**, that is, furnished with little hooks or points; in Saxony wool there are as many as 2,800 of these little hooks (see illustration) to one inch, in fine Southdown wool 2,000, in Leicester 1,800, etc. The twist is necessary in spinning a thread. The fine, almost innumerable little hooks on the scales help to make a dense firm fabric. In the finished cloth this smooth matted surface must be roughened or given a velvety nap by passing over it burs or teasels, exactly as in ancient times they used the burs of the plant called "fuller's teazel." Wool may be spun into thread so fine that one pound of the finest would spin out 100 miles.

Of course, Merino wool is the finest; and the different breeds of Merino vary. The life or luster also varies. In general the long and lustrous wooled varieties, Lincolns, Leicesters, etc., have not the kink for spinning or the numerous clinging hooks which make the different Merinos so valuable for fine weaving. All varieties are needed, as there are different classes of demand in manufacture. It is just a question for each grower which breed is best suited to his conditions and to his available market.

England likes to furnish us with her lustrous wools. France charges us high prices for the exquisitely fine dress goods she makes from her fine French Merinos. Both of these countries find wool growing a profitable industry on land which is the highest priced per acre of any in existence. In fact over all Europe sheep are the very basis of successful agriculture.

Why are there then in the United States so many sheepless farmers?

Right Care of Sheep

Watch health conditions at every turn. As we have seen, ill health affects even the wool of the sheep. These animals are hardy, but when real misfortune comes they succumb to it quickly.

FRESH AIR In the matter of care, the first big thing to take note of is that sheep need fresh air. No other kind of air will do. Better no house at all than one that is close and stuffy, where parasites breed until the fleece falls out, and colds and catarrh result from the smothering heat of crowded bodies.

Sheep will not stand overcrowding. In winter shelter there should be about 12 sq. ft. for each sheep.

The sheepfold must be ventilated, but must also be free from any draught.

Why do sheep need more air than other livestock?

WINTER SHELTER In the first place they are descended from mountain and free range ancestors, and their bodies are constructed for this activity, which takes full breathing. Then, although so hardy, they have weaker constitutions than any other farm animal; so that any interference with the lungs and breathing quickly leads to other disorders. One of the most critical times for the sheep farmer is when his flocks are brought in from the fields and put into winter shelter. Some farmers forget that, winter or summer, sheep must have plentiful fresh air. Better a rough shed than a house, if the house isn't properly ventilated. Whether a shed or a house, the important thing is to have it always dry, out of the wind, and plentifully bedded.

DRY COLD Cold doesn't matter—not to a sheep in his winter woolens!
IS SAFE Cold is what stimulates the fleece to grow. But there must be no moisture, and no draught. Windows should be close up to the eaves to guard against draughts. A good plan is to run the shed north and south with windows at each end, thus avoiding east and west exposures. When the wind blows from the north make that end tight, and open the shed at the south end for ventilation; and when it blows from the south, vice versa. Have the roof sound, or rain and snow will soak the fleece. Ordinary snowfall the sheep can easily shake off from the outer fleece, so that it never wets the skin. But if the whole shaggy suit of wool is matted and wet there is nothing for it but to let the heavy fleece slowly dry on them. You can imagine just how this feels—or if you have no imagination just put on several heavy woolen suits and jump in an ice bath in freezing weather, then stand outdoors while you “dry off.” Breeds with long open wools, parting clear to the skin along the line of the back, should never be exposed to snow, or wet conditions. Then too a wet fleece loses its “yolk” or “oily substance.” The wet, cold animals crowd up together, heating and matting the fleece, pressing it into “felt,” destroying its weaving value. It becomes “cotted,” as we call it.

SEPARATE PENS And while making that winter shelter, just separate it into convenient pens or apartments, with movable gates. You'll find plenty of reasons for doing so when you make ready to feed and want to work in one pen without bother and without damaging the fleece with falling chaff, etc. Then later on you'll want to separate the breeding ewes from those to be fattened. Or you'll want to separate the lambs according to ages, or pen off a part of your flock for a buyer or butcher. Penning has many advantages.

FEED RACKS Racks for feeding save time and trouble. Also put up a permanent trough for salt and preparations to hinder internal parasites, such as the excellent formula given on page 46.

Don't feed too frequently in the same place, as the breath will spoil the food, making it unpalatable. It is necessary to use Conkey's Nox-i-cide Dip and Disinfectant regularly to disinfect all racks and troughs used in feeding sheep if you expect to keep the flock from contagion. More about disinfecting on page 125.

THE FLOOR PLAN Feeding racks for sheep on farms should be carefully constructed. Many sheepmen favor a long shed plan for a sheep-house with racks in the center where all can get at them. This plan gives a good area and is cheaper to build than the square or round barn type. If you want double capacity, make it double deck—sinking the first floor about three feet below the surface of the ground, raising the second floor about four feet above the ground, thus giving room for a man to stand upright in the lower part. Make runways to each floor for the sheep. You will find this plan highly satisfactory in practice. Sheep don't need costly housing. A light structure with plenty of floor space will always answer. Of course a square building gives more floor space than a long narrow building. The octagon and round style give most of all. Round buildings are expensive. But did you ever investigate an octagon style and see how strong and cheap it is for building?

THE GOOD SHEPHERD Sheep are easily frightened, in fact, are very high strung animals. The good shepherd keeps them contented. This is the only way to get maximum production from the flock. Frequently a great cause for discontent on farms is irregular feeding—this is true of all animals. Any animal can easily fret off more than the delayed meal can put on. Besides, this isn't fair treatment.

WATER Be sure to give the sheep water that is fresh and clean. Give plenty. They will thrive if watered only once a day; but the gain is way out of proportion if they have free access to water and can get it anytime.

If watered from troughs, don't let these become icy; but after sheep are through drinking turn each trough over. If sheep are allowed to drink icy water their bodies soon become chilled. This lowers the natural vigor and takes more feed to warm up. Sheep are easy victims to chilled stomachs. Ewes often lose their lambs from this one cause.

SALT Keep salt before the flock. It is about as necessary as food. Too little in the blood shows relaxation. If where the sheep can help themselves anytime they won't overeat it. Salt helps to keep down internal parasites. Better attention to salting would cut down about half the present trouble with these pests.

Read page 46 for a good formula for a home made medicated stock salt that is an ideal conditioner for sheep. It is easy to make and costs less than 2½ cents a pound. This simple conditioner will practically insure the flock from internal parasites.

PARASITES Parasites, both internal and external, favor sheep. They are the big enemy to sheepmen's profits. Under diseases we discuss this big subject fully. Here is a special caution: Treat the collie at regular intervals for intestinal worms or he will pass this infestation over to your flock and soon they will be having Gid or Staggers. Conkey's Worm Drops are the specific dog worm remedy. A collie dog with worms is the worst natural enemy to your sheep. Treatment must be regular, every two months, and of course the dog must be tied up away from the flock during the treatment.

DISINFECTING Remember, for all disease, the old warning is the best advice—Prevention: Disinfect their quarters, using Conkey's Nox-i-cide Dip and Disinfectant. Sprinkle all corners or hedge bottoms where they gather in hot weather. This will sweeten the ground, and tend to keep healthy their hoofs.

DIPPING In most of the Western States the use of a dip is enforced. Sheep are not admitted to national range unless certified free from disease, or dipped according to legal requirement. It is believed that combined efforts like this will practically stamp out the terrible scab disease. In Montana, if animals with contagious diseases, such as lip or leg ulceration, etc., are not promptly treated after due notice, they are taken up by the state, and the state veterinarian treats them at the cost of the owner. Loss from sheep scab is great only where treatment is neglected. It is easily cured at the simple cost of Conkey's Nox-i-cide Dip and Disinfectant, used as directed.

Dipping, twice a year is possible, is really indispensable to the health and comfort of the flock. The improved condition of the fleece will alone repay every dollar spent in dipping when Conkey's Nox-i-cide Dip and Disinfectant is the liquid used. But dipping does even more than this for sheep. Where the dip is an antiseptic, such as Conkey's Nox-i-cide Dip and Disinfectant is, it does a good deal more than merely clean the skin, cure scab, remove the scab mite, ticks, lice and fungoid parasites of the wool. It opens the pores, and helps the body get rid of the poisons in the blood. It increases the general health as well as bodily comfort of the animal. It improves the wool. Not all dips can be safely used, as some will injure the wool on account of their acrid nature, or if, not harmful in this point will stain it and thus spoil its market value. Of course avoid dangerous lime and sulphur mixtures, or those with arsenic in them which will injure the sheep if they chance to get any in their mouths while dipping; and which are almost sure to injure the lambs if the ewes are not thoroughly dry before the lambs have access to them. This applies to tobacco dips also, and besides tobacco dips spoil the wool.

THE DIPPING TROUGH A convenient size for the dip trough for a small flock is 12 ft., with slanting sides, so that bottom of trough is about 8 inches, while the top is thirty, deep enough to keep the whole animal under except the head. Keep the dip at a temperature of 100-110 degrees. Of course when fresh water is added for temperature the right proportion of the Dip and Disinfectant must also be added. From the trough the sheep goes to a detaining pen with sloping floor running back to the trough, so that all liquid draining from the animal will run back to the dip vat.

NO HARM TO LAMB OR SHEEP With Conkey's Nox-i-cide Dip and Disinfectant there is no danger to nursing lambs, as the mixture will not even nauseate the animals. If the sheep itself swallows a mouthful or two, so much the better, for its properties are also antiseptic and will help to kill internal germs and heal any diseased places. It will set up coughing and sneezing if a little gets into the nostrils and so help to dislodge the bot-fly. Used after shearing Conkey's Nox-i-cide Dip and Disinfectant will heal any cuts. After shearing is the time some farmers dip; as it is far more economical than when the whole heavy fleece must be soaked up in the dip liquid. Shorn sheep with any cuts in the skin from shearing are exposed to blow-flies, and consequent serious trouble Conkey's Nox-i-cide Dip and Disinfectant heals such places.

FLIES In summer, flies are the terrible sheep enemy, especially summer blow-flies. Much can be done to lessen trouble by proper care of the rumps, cleaning and clipping the filthy locks and treating with the same disinfectant solution. Dipping every six to eight weeks during the season will act as a fly preventive. Or the Fly Knocker can be used on face and hindquarters, which are most liable to attack. Some sheepmen plough up the earth so the animals can grovel their noses for safety, which seems to be their instinctive means of protection. Daubing the sheep's nose with common tar, is a good practice; especially if the tar is softened up with Conkey's Fly Knocker, which destroys any eggs in the nostril and will keep the bot-fly from alighting again. The sheep muzzles should be smeared every second or third day with this preparation. See more about these bots or gid flies on page 180 under Diseases.

FENCING In summer make sure that you have the farm well fenced. Fencing is necessary because sheep don't get on well with other farm animals, and should never come in contact with hogs in particular. Use woven wire, not barbed. Barbed wire damages the fleece and frequently wounds the animals, making them more liable to infection. Besides, barbed wire doesn't keep out dogs. What you want is a dog-proof fence—the better returns at lambing season will pay for it time and time over. Dogs run and chase the sheep, and the flock frets off its gains in fleece and flesh fast as you can put it on. You don't always know when this is going on. Watch the dogs at night. Sheep never bleat out their troubles except in hunger or loneliness. You might never know the dogs were chasing and running them, but up and down, up and down, all night long they may go, frightened and wounded, but fleeing in silence. Breeding ewes badly frightened rarely ever recover entirely.

KEEPS PASTURE FRESH Another reason fencing pays for itself, is because you can do with less acreage; always keeping some pasture untouched for lambs at weaning. Change of pasture is good for sheep. If you have to do with one pasture, then divide that, letting the sheep graze two weeks in each half. This keeps it fairly fresh, whereas the other way the flinty hoofs would soon pound out every living blade. More fencing and better will in time lead to more sheep in the country—and better. At present in the leading agricultural states of the United States there are not over 25 sheep to each 1000 acres. Great Britain has 300 to every square mile. No wonder the farm economists are preaching more sheep to American farmers.

MORE SHEEP! Even with intensive farming you can give the sheep some show of range. Utilize the fence corners. Let them into the weed lot and brush lot. They will make good mutton, and in the meantime help you to clear the land. Let them into the stubble field, where they can pick up the scattered grain that would otherwise go to waste. Every little helps in the problem of thrifty farming. Sheep consume classes of feed that other livestock neglect entirely. The sheep is a natural optimist and will pick up a plunk of wood or bit of bark, chew it with relish and say grace for it.

A sheep never dies in debt to its owner—says the wise old proverb!
Go to it, sheepless farmers!

Table showing Origin, Development and Characteristics of Sheep Breeds

B R E E D	Native Home	Quality of Wool	Average Weight of Wool		Quality of Mutton	Breeding Qualities	Hardiness	Foraging Ability	Average Weight of Sheep	
			Rams	Ewes					Rams	Ewes
AMERICAN MERINO	Spain	Finest in Existence	15 to 20 lbs.	12 to 15 lbs.	Inferior	Average	Excellent	Excellent	130 lbs.	100 lbs.
DELAINE MERINO	America (U. S.)	Excellent	15 to 25 lbs.	10 to 15 lbs.	Good	Good	Fair	Fair	 lbs.	 lbs.
RAMBOUILLET	France	Excellent	15 lbs.	10 lbs.	Good	Good	Excellent	Good	185 lbs.	155 lbs.
SOUTHDOWN	England	Good	7 lbs.	5 lbs.	Excellent	Average	Good	Good	175 lbs.	135 lbs.
SHROPSHIRE	England	Good	12 lbs.	10 lbs.	Excellent	Excellent	Fair	Fair	225 lbs.	160 lbs.
OXFORD DOWN	England	Good	9 to 12 lbs.	5 to 8 lbs.	Good	Excellent	Good	Fair	300 lbs.	200 lbs.
HAMPSHIRE DOWN	England	Fair	5 to 7 lbs.	3 to 5 lbs.	Excellent	Excellent	Good	Good	250 lbs.	185 lbs.
DORSET HORN	England	Good	9 lbs.	6 lbs.	Fair	Good	Fair	Fair	225 lbs.	165 lbs.
CHEVIOT	England	Good	7 to 11 lbs.	6 to 9 lbs.	Excellent	Excellent	Excellent	Excellent	200 lbs.	155 lbs.
SUFFOLK DOWN	England	Good	8 to 11 lbs.	7 to 9 lbs.	Excellent	Excellent	Good	Fair	230 lbs.	180 lbs.
TUNIS	Africa	Good	7 to 9 lbs.	5 to 8 lbs.	Excellent	Excellent	Good	Fair	150 lbs.	120 lbs.
LEICESTER (Pronounced Lester)	England	Excellent	6 to 8 lbs.	3 to 5 lbs.	Fair	Fair	Fair	Fair	240 lbs.	190 lbs.
COTSWOLD	England	Good	9 to 12 lbs.	6 to 8 lbs.	Inferior	Good	Fair	Fair	265 lbs.	220 lbs.
LINCOLN	England	Good	20 lbs.	15 lbs.	Inferior	Fair	Fair	Fair	350 lbs.	275 lbs.
BLACK FACED HIGHLAND .	Scotland	Poor	5 lbs.	4 lbs.	Good	Fair	Excellent	Excellent	 lbs.	 lbs.
ANGORA GOAT	Asia Minor	Mohair Excellent	Rams & Ewes Average 3 lbs.		Excellent	Fair	Good	Good	80 lbs.	60 lbs.

Common Diseases of Sheep

ABORTION Next to the cow, the ewe is most liable to this trouble, although with proper care from the flockmaster most cases can be prevented. Abortion in ewes is commonly caused by some one of the following: Pasturing on frosty herbage in wet, cold weather; overloading the stomach with coarse, innutritious fodder; eating such food as ragweed, frozen turnip leaves, beet leaves; ergoted grain or hay, smutty corn or oats, etc.; jostling or hustling by the flock; chasing by dogs. The careful shepherd will be on his guard against all such dangers. Treat the same as with cattle, page 141, using about one-fourth the amount of carbolic acid for the hypodermic injection.

ANAEMIA— This disease attacks lambs usually. See description under **PAPER SKIN** Hoose, Husk, Paper Skin, etc.

BLOAT The symptoms are swelling of the abdomen, with skin tense like a drum. The left side, over the paunch or rumen, is most affected. The animal stops eating and shows dulness, pain and suffocation. The trouble is due to gas distending the paunch, which is full of fermenting food. The attack may follow drinking a great quantity of water immediately after eating, or feeding on frozen forage, wet pasture, such as corn, clover, rape, etc., with the dew on it. It may come from overeating any succulent feed, to which they have not been accustomed. Usually the whole flock is affected at the same time. Relief must be prompt or they will suffocate.

Treatment Same as for Cattle, page 143, but first clip away the wool, then plunge the trocar into the paunch of each animal, midway between hip and last rib, about three inches from the backbone. When the trocar is pulled out, the canula, being a hollow tube, will let the gas out immediately. When the gas has escaped take out the canula and the wound will close together. Of course the instrument should be clean ready for emergency; and it is better to oil it before plunging into the animal. If the trocar and canula are not handy use a clean knife, dipping it in Conkey's Nox-i-cide Dip and Disinfectant solution ($\frac{1}{2}$ tablespoonful to 1 pint of water), and insert a large quill to keep the passage open after the knife is pulled out. After this give each animal a tablespoonful of baking soda in $\frac{1}{2}$ pint of warm water, which will stop further fermentation. Then treat the animal to bring back to condition, with a drench as follows:

3 oz. sodium sulphate.

1 teaspoonful of Conkey's Stock Tonic.

1 pint warm water.

Sometimes bloat can be relieved by driving the whole flock into a stream, or by dashing cold water over the side, thus starting contraction so that the gas will be expelled naturally. In any treatment, give the doses indicated above, to stop further fermentation and to bring the flock back to condition.

CATARRH—COLD IN THE HEAD This is a common trouble in spring or fall, but may occur any time on exposure to cold winds or rains. Usually it occurs after washing or shearing. The symptoms are snuffing, sneezing, coughing.

Treatment Put the sheep in dry, warm, clean quarters and mix with the feed Conkey's Stock Tonic according to directions. If the discharge from the nose interferes with breathing, wash the noses with a

warm solution of Conkey's Nox-i-cide Dip and Disinfectant, using 1 part to 50 parts warm water.

FLUKE DISEASE— LIVER ROT

This is a disease of the liver, but is not so common in this country as in England; but may occur wherever sheep are on damp, swampy pasture. At first there is bloating, which may be mistaken for fat condition. But if you rub the small of the back or press against the ribs you will hear a crackling sound as the flabby tissue slips beneath the hand. Flukes do not attack sheep on high, dry land; for the reason that the fluke embryo passes its first stage in a certain species of snail found only in wet places. Should these snails be destroyed by frogs, carp, etc., this cuts down the danger from fluke disease. It is not known just how the fluke makes its way into the liver of the sheep, but it lodges there and in time destroys the substance of the organ. **WHEN THE SYMPTOMS OF FLUKE DISEASE APPEAR IT IS ALREADY TOO LATE TO GIVE ANY TREATMENT.** In fact, at first the flukes seem to stimulate the action of the liver and the sheep shows extra good condition. In the course of a month or two it loses rapidly, however, and the wool becomes harsh and dry and finally drops out. The animal loses appetite or shows depraved appetite. The bowels may show diarrhea or constipation symptoms.

Prevention is the only treatment, namely, keep the flock on high dry land, or if this is not possible, kill the flukes before they get past the stomach. The very best prevention treatment is with the following anti-parasite mixture, which is the same as the Conkey formula for a medicated stock salt, namely:

9 pounds common barrel salt,
1 pound Conkey's Stock Tonic,

mixed thoroughly and kept in a dry place, where the sheep can help themselves as wanted. Keep all other salt away from the stock; as this medicated salt will be all they need for any purpose. The cheapest way to prepare the above is to use 2 five pound packages of Conkey's Stock Tonic to 90 lbs. common barrel salt. This will give 100 lbs. of veterinary salt at a total cost of less than $2\frac{1}{2}$ ¢ a pound. A pound of this mixture will be sufficient for four or five sheep for one fortnight. There is no danger of the animals overdosing, so long as this Stock Tonic salt is before them all the time, and they can help themselves just when they want it.

FOOT-ROT

The first symptom is a lameness in one foot, and if neglected this spreads to the others. Trouble starts as a red, moist spot in the cleft above the hoofs, but quickly works in the horn and soon there is a thin, foul discharge. The foot spreads above the hoofs and feels hot and tender to the touch. If neglected the hoof becomes wholly diseased and falls away. The discharge from the foot will carry the disease to other animals running on the same ground.

Foot-rot at different stages

Treatment Wet marshy ground usually starts the trouble; and the first thing is to drain wet pastures. Don't feed on wet, muddy lands. Pare down the hoof, taking off

all overgrowth, then stand the sheep in a four inch deep solution of Nox-i-cide Dip and Disinfectant, 1 quart to 12 of water. Fill all cracks with a paste dressing—flour and Nox-i-cide Dip and Disinfectant, using 1 tablespoonful of Nox-i-cide Dip and Disinfectant to five of water. If cutting has been very deep, it is well to bandage. Dressing the hoof with Conkey's Hoof Remedy will hasten development of healthy new horn.

GARGET—INFLAMED UDDER There are two forms of this disorder, known as simple and malignant. In simple garget the udder is swollen tense, and feels hot and hard to the touch. Pus or blood appears in the milk. The cause may be (1) too much grain in the feed of the ewe immediately after lambing; (2) banking up of the milk from slack nursing or loss of the lamb; (3) catching cold, usually from lying on chilled ground; (4) irritation and soreness from the lamb's constant bunting of the ewe.

Treatment for Simple Garget—Give Epsom salts to relieve the feverish symptoms, using 5 oz. to 1 pint of water. Bathe the bag with warm water, dry gently, then rub well with Conkey's Bag Relief, to soften it and reduce the inflammation. Then keep the udder milked clean.

In malignant garget the udder is swollen, but instead of being hard and tense feels soft. It is red or purplish from congestion. The ewe shows general symptoms of fever, dulness, no appetite, and loss of flesh. In time the gland tissue of the udder dies and sloughs off.

Treatment for Malignant Garget—There is no cure for a true case of malignant garget. Separate the ewe from the rest of the flock and disinfect thoroughly with Conkey's Nox-i-cide Dip and Disinfectant, 2 teaspoonfuls in a pint of warm water. This will keep the disease from spreading. As soon as the part is dead it should be cut away without waiting for natural sloughing. To heal dress with the Dip or Disinfectant or sprinkle Conkey's Healing Powder over the cut surface. The Healing Powder has astringent properties, and hence is valuable for all surgery cases.

GID—STURDY—STAGGERS—TURN SICK The symptoms are swaying, reeling, moving around in a circle or running straight forward with head up, or other peculiar, unconscious and irresponsible movements several times a day. At first the symptom may

be only dulness and clumsy moving around. These symptoms usually disappear and return again in four to six months, although death may come in a few days or a week. The cause of the various symptoms is disturbance of the brain due to the presence of Gid bladder worms. These worms are developed from the eggs of the dog tape-worm, and get into the pasture or water from the droppings of the sheep dog affected with tape-worm. From the stomach these embryos make their way to the brain or spinal cord. The first symptoms seem to disappear soon as the embryos find a permanent resting place in the brain. But in the course of four to six months they encyst themselves (that is, form bladder-like sacks) and it is the pressure from these cysts that affects the brain and causes the peculiar unbalanced actions.

Gid worm (tenia coenurus)

Treatment for Gid is preventive: The chief thing is to prevent infection of the pasture, etc., by tape-worms. At regular intervals, all sheep dogs should be tied up away from the flock and purged for tape

worms, using Conkey's Special Dog Worm Remedy. A practical plan is to butcher the sheep for market before they lose condition, since the mere presence of the gid-worms at that stage does not affect the marketableness of the flesh. In this case, however, take special care to destroy the brain and spinal cord of the butchered animals; for if the dogs eat these infected parts the tape-worms will develop again and the whole trouble will go on in an endless chain.

GRASS STAGGERS This disease should be carefully distinguished from Gid, just described. In grass staggers the animal has a staggering gait, and the actions are restless and delirious. Sometimes there is drowsiness. The disease develops slowly, the first symptom being loss of condition, no appetite, fever and constipation; the eyes staring, the nose dry and hot. The cause is wrong feeding, due to one of the following: (1) innutritious feed, mostly roughage; (2) sudden change in feeding; (3) food too rich, especially too much concentrate or grain; for instance, feeding millet hay when heavily seeded may cause this sickness.

Treatment Purge the animal, then mix with the feed Conkey's Stock Tonic as directed. This will bring back the appetite, act as a tonic, and also correct the trouble with digestion. A little oil meal added to the feed will greatly benefit the sheep.

The following is a good formula for treating Grass Staggers, but is more trouble to give, and also more expensive:

One-half pint linseed tea to each animal with 2 teaspoonfuls of this mixture: 1½ oz. aromatic spirits of ammonia, ½ dram fluid extract of nux vomica, 2½ oz. alcohol.

This should be given twice a day until appetite returns. Then feed carefully, giving a little oil meal.

GRUB IN THE HEAD During July and August the gad-fly is abroad in the land, seeking its chance to deposit its egg in the nostril of the sheep. The sheep fear this pest, and during the egg laying season will huddle together, their noses pressed into each other's fleece or buried in the ground or between their fore-legs. When a sheep is "struck" or stung by a gad-fly it leaps frantically, shakes its head and seems to be trying to rub the egg from the nostril. The sting subsides and the sheep shows no further symptoms until the following spring, by which time the larvae are developed and begin to burrow, working their way up into the nose cavities, and hollow folds and sometimes reaching even the brain. The symptom at this stage is a bloody discharge from the nose and sneezing. Often sneezing will dislodge the grub and there will be no further trouble, unless the sheep has been "struck" several times in one fly season. If the grub succeeds in making its way to the brain instant death results.

Diagram showing location of grub in the head and where to trephine the skull to remove them.

Treatment If the animal is valuable the grub can be removed by the operation of trepanning the skull, and the larvae cleaned out. See diagram cut. But the only cheap and practical treatment is preventive as follows: During fly season smear the nose of each sheep every few days with a mixture of tar and Conkey's Fly Knocker. The Fly Knocker

can be used alone, but the tar daubed on the nose will remain longer, thus be more convenient.

The flies will not strike the sheep so treated. Other suggestions for prevention are to plow up the pasture so as to give the sheep soft ground which to burrow their noses. Or, provide a dark shed for the sheep to run under during the fly season. Conkey's Stock Tonic mixed with the feed, or added to the salt for the flock, 1 part to 9 parts salt, will help the sheep over this trying season when they are apt to lose condition. Put this salt mixture in a trough covered with a board in which you have made holes just large enough for the sheep to get the salt, and keep the holes smeared with pine tar and Conkey's Fly Knocker. When the sheep go to the salt trough they will daub their own noses and save you the trouble of applying.

HOOSE—HUSK— This common disease affects lambs
PAPERSKIN— mostly under one
LUNGWORM year old. The

symptoms are spasmodic, suffocating cough, with a running discharge from the nose. Breathing is very difficult, so that the blood loses vitality. The lamb becomes dull, loses flesh, and the eyes and lips appear bloodless. The skin becomes harsh, dry and paperlike, hence the name "paperskin". The wool is dry and easily pulled out. The trouble is due to the lung-worm, a parasite which finds its way into the bronchial tubes and lungs, where it is found in clusters of small, threadlike worms, almost indistinguishable in the frothy mucus.

Lung worm (*strongylus filaria*)

These small white worms gather in clusters and are almost invisible in the frothy mucous of the throat and lungs.

Treatment Medical treatment is difficult, because of the location of these worms; as it is hard for a medicine taken into the stomach to act directly on the air passages. Sometimes the worm can be dislodged by giving each lamb 1 teaspoonful of turpentine in milk before the regular morning feed, keeping up this treatment for one week. This saturates the system, and the fumes are given off in the lungs. Another good treatment is to put the lambs in a closed room and fumigate them with sulphur and alcohol in a deep pan, set in a tub of water. Give the lambs nutritious, easily digested food, such as linseed meal, oatmeal and bran, with Conkey's Stock Tonic mixed in the feed according to directions. This will insure full digestion of the feed, and also act as a tonic and alterative for the system. This treatment will be found very successful.

Prevention Feed the lambs on bare lots, and away from the old sheep. When lambs are fed on lots where old sheep have been grazing and coughing up the worms, the lambs are pretty sure to become infested. Also take care that the water is not infected. During the coughing spasm many of the worms are dislodged, and if these fall into the drinking water the lambs are easily infected. Also, for the whole flock, use the anti-parasite mixture as follows, putting it where the animals can help themselves. This anti-parasite mixture is the same as our general formula for veterinary salt, as follows:

90 lbs. common barrel salt,
10 lbs. Conkey's Stock Tonic (2 packages, \$1.00 size).

Mix thoroughly and keep in a dry place, where the sheep can help themselves. The cost is less than $2\frac{1}{2}$ c a pound; so that this stock salt is cheap as well as effective. Estimate one pound of the mixture a week for every eight or ten sheep or lambs. Lambs that have lost condition, should be built up by good feed, and the full strength Stock Tonic, according to directions on packages.

MAGGOTS Any open wounds or sores on sheep are liable to become infested with maggots. Treat all such places with Conkey's Healing Powder, and get them quickly cured as a preventive. When maggots are already found in a sore, paint the part with sulphur and benzoated lard, half and half, or oil of tar, or use simply a solution of Conkey's Nox-i-cide Dip and Disinfectant, 2 tablespoonfuls of the Nox-i-cide Dip and Disinfectant to a pint of water.

MALIGNANT CATARRHAL FEVER In this disease the symptoms are running at the nose, swollen eyelids, sometimes matter gluing the eyelids. The sheep breathes rapidly, coughs, loses appetite, and the digestion is all out of order. The symptom may be looseness or constipation of the bowels.

Treatment Separate the sick animals at once, and disinfect the quarters thoroughly with Conkey's Dip and Disinfectant according to directions for mixing with water. For individual treatment, swab or spray the nose and mouth with Conkey's Pain Lotion. Put the sheep in a dry, clean, airy shed, and mellow them up with a few meals of warm bran and linseed mash. Keep the whole flock on nourishing feed. Twice a day mix with the feed Conkey's Stock Tonic, 1 tablespoonful to every five sheep, as directed. This treatment will very quickly correct the digestive disturbance and tone the whole system to fine, healthful condition.

NODULAR DISEASE This disease is named from the tumors or nodules found in the walls of the intestines. It is what sheepmen know as "knotty guts." In each of these tumors or nodules is found a larval worm. The symptoms of nodular disease are poor condition, dullness, weakness, paleness of eyes and lips, and dried-up wool. Nodular disease is sometimes hard to distinguish from stomach worms.

Treatment Remove the flock from the infested pasture to high dry land, where no sheep have been for at least eight months previous. See that there is plenty of water, and that it is pure. Keep before the flock all the time the anti-parasite mixture described above, namely, the veterinary salt made up as follows: 9 parts common barrel salt, 1 part Conkey's Stock Tonic, mixed thoroughly and kept in a dry place. Feed the flock liberally to build up good condition. The medicated salt will usually be all that is necessary, but for the first week or ten days we advise using the full-strength Stock Vigor mixed with the feed according to directions on packages. This will act as tonic treatment, and quickly bring the sheep around to good condition. A small quantity of Conkey's Nox-i-cide Dip and Disinfectant in the drinking water, say a good half-cupful to 1 pail of water, will be very beneficial for internal treatment, and should be given first before moving the flock to new pasture, and repeated every few days after the flock has been moved.

Prevention This is another case where the easiest and safest way is to prevent infection. The anti-parasite mixture described above, which can be mixed up at home cheaply, using common barrel salt, will act as a preventive, if kept before the sheep all the time, so that they can help themselves. This mixture is very cheap, costing only $2\frac{1}{2}$ c a pound. Ninety pounds of salt and ten pounds of Conkey's Stock Tonic, costing less than \$2.50 for the hundred pounds, will be enough to last a flock of 50 sheep for fully four months.

SCAB This is the scourge of the sheep industry, which annually costs sheep owners thousands and thousands of dollars. Scab is very contagious. It is caused by an itching, mangy, skin parasite, a kind of mite, just big enough to be seen by the naked eye. The bite of this mange mite or scab mite raises itching blisters on the skin and with constant irritation and scratching of the sheep the skin becomes much inflamed, the blisters break and form yellow-brown scabs which give the name to the disease. The scabby skin cracks and ulcerates and the wool falls out in bunches. Usually the back and sides, rump and shoulders are the worst affected parts. The picture, copied from a photograph, shows the actual work of scab mites. In most sheep states the laws are very strict for treating scab in sheep, on account of the contagion. It is known that old buildings, posts, or even tufts of wool on bushes or range, will harbor these mites and start the infection in a healthy flock.

1. Drawing from actual photograph of scabby sheep. 2. Common scab mites (*psoroptes communis*). These insects are larger than the head mite and are easily seen by the naked eye.

Treatment Dipping is the only remedy. There are various kinds of dips; and while all of them kill the scab mite, many are extremely dangerous, if allowed to get into the mouth, eyes or nose. Such poisonous dips not only endanger the sheep, but since they burn, curl and stain the wool, they are absolutely unfit to use for dipping purposes. It has long been a scientific problem to find a dip solution that would actually kill the scab mite, and at the same time be safe for the sheep. Where the fleece has already been destroyed by the disease, the poisonous dips (such as arsenic, lime and sulphur, tobacco, etc.), are still unsafe to use on account of the chance of the sheep's getting the dip in the mouth, nose or eyes, or the danger of lambs nursing. We positively guarantee Conkey's Nox-i-cide Dip and Disinfectant to be safe, non-poisonous, non-corrosive, and that it does not even stain the wool. It does kill the scab mites. But as with every dip, a second treatment 10 days later is necessary to kill the nits which hatch out. The female scab mite lays its eggs (usually ten eggs) under the scab and these hatch out and mature in about 15 days. Thus it is easy to see

how quickly even one mite could start the infection; as in three months' time a single mite can produce almost one million. Scab is easily cured by the use of Conkey's Nox-i-cide Dip and Disinfectant. If possible dip twice a year, as the dip is a general benefit to the health and condition, cleaning the skin, healing any sore as well as killing the scab mites, and also ridding the sheep of ticks. Conkey's Nox-i-cide Dip and Disinfectant actually improves the wool. Lambs can nurse the ewes immediately after dipping. If any of the Dip liquid gets into the mouth it is beneficial rather than harmful; as it will help to rid the stomach and intestines of worms. If a little gets up the nostril it will cause sneezing, and so help to dislodge grub in the head. In dipping, use a trough and let each animal be held in the solution for two minutes, and let the head be ducked under at least once. When the sheep is taken out of the dip stand it on a board platform sloping back into the dip trough, so that the liquid can be squeezed out, and will not be wasted. The temperature of the dip liquid should be 100 to 110 degrees. Conkey's Nox-i-cide Dip and Disinfectant mixes with warm water in the proportion of 1 part to about 67 of water. This makes it cheap, which is another important essential for practical treatment. Where sheep are affected with Foot-rot, they can be prepared for special treatment, see paragraph before, and the dipping for scab and treatment for foot-rot can be performed at one operation and handling of the flock.

SCOURS A foul smelling loose discharge, with much soiling of the tail, hips and legs, characterizes this disease. The animal loses appetite; but shows a pot belly, with evident pain in the abdomen, as it is restless and switches the tail constantly. Weakness and lean condition follow.

Treatment The treatment is according to the age of the animal. If a suckling then the trouble is (1) from wrong feed or care of the ewe or (2) from navel infection. Of course, if this latter trouble, the only treatment is prevention—careful disinfection of the lambing quarters before lambing, and immediate washing of the stump of the cord of the newborn lamb with Nox-i-cide Dip and Disinfectant solution; or in absence of this a 5% solution of carbolic acid. Then paint with iodine. If the trouble is with the ewe, give first a mild laxative, and then mix Conkey's Stock Tonic with the feed according to directions. This will act as the necessary alterant. It will also tone up the general system. If the scouring lamb is already weaned, the cause must be overfeeding, or too sudden changes in the way of feeding, or a feed ration out of proper balance. (See page 50.) Again, the trouble may come from cold, damp quarters. First, give 2 teaspoonfuls of castor oil with two to three drops of Nox-i-cide Dip and Disinfectant. Keep the sick animals on gruels instead of whole grain and dry fodder for a few days and give 1 teaspoonful of Conkey's Stock Tonic at each feeding. After the animal is on regular feed, use Conkey's Stock Tonic with the feed according to directions.

SHEEP LICE Intense itching, followed by rough thickened skin, black and scabby, with short dry twisted wool, indicates lice. The cure is dipping, using a solution of Conkey's Nox-i-cide Dip and Disinfectant (1 gallon to 67 gallons of water). Give special attention to the head, and keep the sheep immersed a full minute. If the dip liquid is squeezed out of the fleece and allowed to drain back into the dip tank, 68 gallons will be enough for 70 head.

SHEEP TICKS These ticks stay in the wool, only getting down to the skin occasionally to suck blood. So long as they cling to the wool they do not bother the animal; but if neglected they multiply until there is a continual itching and biting, keeping the sheep in torment. Lambs are the worst sufferers. The only **treatment** is dipping, using Conkey's Nox-i-cide Dip and Disinfectant in a solution (1 gallon to 67 gallons of water); hold in this dip a little over two minutes, then stand the animal on dripping board while you squeeze the dip from the wool. In this way each sheep will use up $\frac{1}{2}$ gallon of the mixture. Usually it is necessary to dip a second time, two or three weeks from the first, to destroy nits. Give the sheds or pastures rest for a week or so. Clean up the old quarters and disinfect with Nox-i-cide Dip and Disinfectant thoroughly.

SORE MOUTH This condition is distinct from the true foot and mouth disease, being simply ulceration. It is not contagious; but the germs remain in pastures or sheds, and wherever the mouth is torn or scratched by the forage, these germs enter and inflammation sets in. In the same way, if the feet are cut by brambles, the germs enter and the animal goes lame.

Treatment Remove the scabs and wash the sores twice daily with Nox-i-cide Dip and Disinfectant solution, 1 teaspoonful to a pint of warm water, 1 part to 100 parts water. Clean up all lots and sheds, and disinfect. This will prevent further infection.

STOMACH WORMS These worms cause a great deal of trouble to sheep, and loss of profit to owners. They are usually found in the fourth stomach where they gorge themselves with the blood of the sheep, and cause an unthrifty, dull, lean and weak condition. The skin is pale. Sometimes a loose, painless puffing or swelling shows under the jaws. The animal has diarrhea and great thirst, but may or may not relish food.

Treatment is difficult with any medicine; but the following has been successful: a solution of Nox-i-cide Dip and Disinfectant, 1 teaspoonful in a pint of water, shaken up to a milky fluid or emulsion, given every other day for three days in doses as follows: Lambs, four to six tablespoonfuls; sheep, eight to ten. Dose should be on the empty stomach, and no feed or water allowed for three hours after. This medicine will have to be given as a drench to each animal separately, or if this is impractical, try as easier method, mixing with the feed Conkey's Worm Remedy in its pure state, allowing 1 tablespoonful to 5 sheep. Treat the infested pasture by burning it over in the fall or spring. To be safe, infected pasture should not be used by cattle or sheep for a year unless thus burned over. Old sheep can resist stomach worms much better than young lambs. Sucking lambs first get infected by sucking at the foul locks of the dam. Later they pick up the eggs while grazing on the same pasture with the ewes. The best plan is to treat the ewes all winter, giving daily access to Stock Vigor mixed dry with barrel salt, 1 part to 9 parts of salt, which will act as an anti-parasite, and keep the animals otherwise in fine condition. At all times, whether in feed lot or pasture, keep the Stock Tonic Salt where all the sheep can get at it. When they can get it just as they want it, there will be no danger of their taking too much any time. Mixed in this proportion, 10 lbs. of Stock Tonic to 90 lbs. of barrel salt, you have an effective, home-made, cheap, veterinary salt, costing you less than $2\frac{1}{2}$ cents a pound. Estimate 1 pound per head for 60 days. The cost is nothing in comparison—you practically insure your flock.

TAPE WORMS Unthriftiness is the chief sign of tape worms, with continued and increasing loss of condition. Sometimes the gait is unsteady from weakness. Sometimes the flanks are distended with gas; while the appetite is keen, the animal continually craving for food and water. But the chief symptom is the actual finding of segments or joints of the tape worm in the droppings. The worms are of two kinds—the fringed tape worm taking up its place in the bile-duct and the broad tape worm attaching itself to the intestines.

Treatment There is no positive way to reach the fringed tape worm in the bile duct. The broad tape worm in the intestines succumbs to the following treatment: Withhold all food for twenty-four hours, then give one-half to one dram of extract of male fern in two to four ounces of castor oil. Do not use the infected pasture for either sheep or cattle. However, if the tape worms are of the fringed species, the same pasture will do for horses and cattle, as the fringed species will not attack them, but in time die out. Be sure to feed the flock well, give plenty of drinking water, have salt where they can get it, and wherever possible move them frequently from pasture to pasture. This is another case where an anti-parasite mixture, such as already described, using common barrel salt thoroughly mixed with Conkey's Stock Tonic in proportion of 1 part Stock Tonic to 9 parts common salt, will cost practically nothing—not over a cent and a quarter a month for a sheep, but will practically guarantee you against serious losses from tape worms or other numerous parasites of stomach and intestines. It is also plain, that where this mixture is constantly before the animals, so that they get it with regularity (for they will help themselves to a little each day if it is always where they can get it), it will actually destroy the fringed tape worm above referred to before it has a chance to get to the bile duct, where no method of treatment can be sure of reaching it. The common sense plan is to treat these parasites before they get past the stomach or intestines. Then you have got them!

WOOL-EATING Sheep do not have many vices, but this is one of them. It is caused by some defect in the feed, and is especially common in winter. It will be necessary to separate the wool eaters from the flock, but the whole flock should have change in feed, giving a little corn if possible. Mix Conkey's Stock Tonic with the ground feed, 1 teaspoonful to each sheep. Sometimes in lambs the habit is formed from sucking at the clotted wool tags around the udder of the dam. It is plain that attention to these, trimming them away from the udder, will prevent the habit.

SWINE

WITHOUT doubt this country is the greatest country for swine growing in the world.

The Mississippi Valley or the corn belt, where grain and pasture conditions are favorable, represents the very center of the industry today. The South, with its abundant corn and many suitable forage crops, could do much more than it is doing, but at present the twelve states of the corn belt, with Iowa far in the lead, head the world for product and values. Estimating approximately 80,000,000 swine in America, 90% are in the United States, contributing a wealth (figures of 1908) of \$339,030,000.

Moreover, the greater part of all these are raised for home consumption. Surplus products, such as bacon, ham, salt pork, live hogs, lard compounds, fresh pork, canned pork and lard oil, are exported annually to an extent way up in the millions. But the amount for home consumption is fully four times as great as all this.

One curious fact is, we butcher annually 10% more than the total number raised. Can you figure this? It looks like a puzzle or some such foolism; but this statement simply means that the increase in production is so enormous that each year we seemingly kill more than we raise because the new litters so quickly replace the butchered stock.

IOWA LEADS In 1908 production, Iowa led with 8,413,000 swine raised. Illinois came next, 4,672,000; and Nebraska, Missouri, Indiana, Texas, Kansas, Ohio, Wisconsin, Georgia, Tennessee and Michigan followed in the order named. Meanwhile the world's swine markets are Chicago, Kansas City, St. Joseph, Indianapolis and Milwaukee, in the order named.

HOW IT'S GROWN The history of this industry in America is one of wonderful interest. Wonderful, not only in the growth of the industry, but for the marvelous improvement of type by careful breeding. It is fair to say that more improvement has been made by breeders

with this animal than with any other on the farm. This progress dates from about 1865, and shows a revolution in standards; so that instead of the old mammoth, slow-maturing swine of older days we have the vigorous modern animal 175 to 400 lbs., and running to flesh rather than lard; and which, with generous feeding reaches its maximum weight before 15 months; thus making a short and thrifty feeding animal. Moreover, breeders have carefully developed the valuable parts of the animal and lessened development of the parts less valuable in the market.

9 FT. VS. 16 FT. DIGESTIVE MACHINERY It's a long and interesting story of development from the wild boar to the improved hog, 1911 model. The total length of the digestive tract of the wild boar, for instance, is 9 ft.; that of the best modern domesticated hog, 16 ft. The 9 ft. were enough for one self-supporting animal. But the 16 ft. tract supports not only the hog, but helps support you and me also. Automobiles are not the only "machines" which have to be up-to-date models.

GOING SOME Naturally prolific, in fact, leading all domestic animals in this respect, swine are easily a profitable investment for the wide-awake farmer or stockman. Sows in different sections have been known to average 16 in the litter, occasionally running even 20 or over. But more desirable broods usually result from litters of 7 to 10 on the average. As a rule pigs do well in big families rather than in very small litters—they are lusty and thrifty, with plenty of appetite. On the very low average of 6 to a litter, Coburn,* the great American authority, points out that a single sow, estimating half of each litter as females, would have produced at the end of four years, farrowing twice yearly, a total of 501 females and 501 males. Do hogs pay?

What the farmer wants is pork and money. So he looks to the commonsense usefulness of the hog. The animal to please him must not be too delicate in body, too fine in bone, too short of carcass, or with legs too long. It must have constitution first, and as far as possible, fair immunity from disease. Good looks count, if looks are thrown in for nothing.

Given such an animal the farmer will treat him right—like an individual, in a good friendly manner, and not like a mere pork and lard machine. Breeding stock, surroundings, climate and feed, each of these must be taken into account as factors in the problem of success with swine. Of all farm animals the hog is the most plastic in the hands of the commonsense breeder.

THE "BACON" CONTROVERSY Now, as regards market type, lard hogs still hold first place by an immense majority. Perhaps this is largely because it is so easy to make lard hogs with plenty of corn. The bacon hog, with a requirement of healthy lean meat with the fat firm, cannot come from a too-large ration of corn; and it is claimed by some that the bacon price does not make up the difference in loss of weight. Certainly the lard hog has no rival in the great belt where corn is the easiest and cheapest thing to feed. The bacon breed on this continent represents a Canadian industry as a general thing, but the bacon hog is getting more attention now, and in time we may come to rival our neighbors to the north.

MARKET CLASSES	Prime heavy hogs	350 lbs. to 500 lbs.	} Lard.
	Butchers	180 lbs. to 350 lbs.	
	Packers	300 lbs. to 500 lbs.	
	Light	120 lbs. to 220 lbs.	
	Pigs	60 lbs. to 125 lbs.	

*Coburns, "Swine in America."

Preference is for 150 lbs. at 10 months. Just stop and think of this fact: Your hogs are ready for market at the age of 10 months, or sometimes one year, at a cost, pound for pound, of just about one-half the feed for beef; or compared with sheep, we find pound for pound pork is produced at about two-thirds the cost of best mutton. The carcasses dress out at good percents, 75% to 82% being the usual average, making an average value per carcass of \$8.75. There is no waste product, strictly speaking. The common expression of packers that they "use all but the squeal" is literal truth.

BEST BREED In the United States, then, the breeds most popular are those known as "large hogs":

- Poland Chinas,
- Chester Whites,
- Duroc Jerseys,
- Yorkshires,
- Berkshires (Modern)

The small Yorkshires or Suffolks and the Essex are the small breeds. The middle Yorkshires, Victorias and Cheshires are known as medium breeds. But it must be understood that this classification is for tendency only. Size may vary according to the section where the breed is raised, food, care, etc. For instance, feed the smaller medium animals corn and you develop to a weight for that individual animal which would put it in the class with "large hogs." This then is simply a general statement for average conditions.

The "Best" breed is a matter of individual liking. It isn't quite true to say there is no best breed—as Coburn (remember, he is the American authority) says there really is a "best breed for every man." That is, for every man there is a breed with characteristics, marketable or ornamental, making it best for his individual purposes. Complete statistics are not procurable; but a comparison of the various herd-books for registration shows the popularity of breeds to be about as indicated in the order of the general table which follows:

BREED	Size	Color	Kind
Poland-China	Large	Black with dash of white on face of jowl, feet, ankles and tail	Lard
Berkshires	Large	Practically same as above	Bacon or Lard
Chester Whites	Large	White entirely	Bacon or Lard
Hampshires (Am. Thin-Rine)	Large	Black with white belt	Bacon
(Large) Yorkshires	Large	White entirely	Bacon
Tamworth	Large	Red, Bronze or Sandy	Bacon
Duroc-Jerseys	Large	Red, Bronze or Sandy	Lard
Middle Yorkshires	Medium	White entirely	Lard
Victoria	Medium	White entirely	Lard
Cheshire	Medium	White entirely	Lard
Small Yorkshires (or Suffolks)	Small	White entirely	Lard
Essex	Small	Black entirely	Lard

HOG THRIFT Compared with other farm animals, hogs are an easy investment. Compared with other farm animals their rate of increase is enormous. Compared with other farm animals, they make the most economical use of feed, pound for pound of product. Every farmer should have at least a sow and pigs. If he owns cattle he should have a proper number of swine to follow the cattle. Don't waste anything the hogs will eat with profit. The hog is the poor man's friend—the rich man's benefactor.

It seems pretty safe to say the hog has paid off more mortgages than any animal on the farm—man included.

Piling up Profits

RIGHT CARE But of course the first and most important thing in raising hogs successfully is to have the right start—good stock. Then with right stock, to give the right kind of care.

Hogs should not be too closely confined, except at the time of fattening. They require exercise, as much as any animal, to keep in good condition, i. e., able to make thrifty gains. One reason for the great gains on pasturage of swine is the abundant exercise. Fall pigs are usually greatly handicapped in development by this lack of exercise. Another handicap to the fall pig is water, for if the water is cold he will not use as much as is necessary for best development. Without exercise pigs cannot be kept in healthy condition—respiratory and digestive functions won't go on properly without it. Give plenty of range.

In swine the lungs have practically all the work of respiration, the skin not having any share in that function. It is true there is a sort of breathing "tube" which runs down through the fore feet, very much as the hollow bone in the wing feather of the fowl, which helps in breathing.

THE HOG PEN Pens should be arranged so they can be cleaned up easily. Cement floors are good for the outer pens; but for sleeping quarters well-matched boards make the best floor, thickly covered with clean straw. Leave the pigs on a cement floor and they soon become lame and crippled from enlarged joints.

The straw must be changed frequently, as for other animals. Be sure all quarters are disinfected regularly. Whitewash as a precaution. On

posts or any place where the animals scratch themselves, fasten old clothes saturated with Nox-i-cide Dip and Disinfectant, as it will rid the animals of lice and keep the skins healed of any sores or wounds, and besides less liable to mange. Use the Dip and Disinfectant liberally about all premises. Better waste a little than later on lose a lot of hogs from epidemic. Hog hygiene is an important subject. Nox-i-cide Dip and Disinfectant will insure this proper sanitation. See page 207 for completer statement.

Prize winning Yorkshire Sow

If any of the neighbors think that just anything is "good enough for a hog," you can point to your clean and disinfected quarters and show how these "dirty" animals respond to clean surroundings and good care. Keep the hog pen clean, dry, warm but well ventilated, and you have settled a big part of the risk in hog raising.

THE HOG TROUGH Another thing—hogs surely do relish clean feed. A hog is omnivorous—eats anything. It's up to you to see that what he gets is good and clean. And because he is omnivorous, you must see that he gets regular change of food. Supplement the grain ration, if you want quicker, more economical gains. Forage crops are profitable. A small area if well planned for rotation of crops will grow all the green feed hogs need.

For instance, corn, grain and clover in rotation make profitable hog pasture. Of course if you haven't seasonable pasture you will have to supply the deficiency in the hog trough—at two to four times the pasture cost. Read every word on feeds and feeding of swine, page 52 to 55.

The pigs should be weaned at about eight weeks. Begin with the heavy fat rascals first, and leave the less thrifty ones a while longer with the old sow. This will give the smaller pigs a better start, and also prevent the danger from suddenly drying off the sow. Slop should be the principal feed; but avoid garbage which is fermenting, or for that matter any decom-

Hog Trough made of Boiler Tank.
Practically indestructible

A covered Hog Trough with feed
spout in center

posing animal food. Such food is poisonous to any living animal. Don't handicap the young stock at the start. Feed a plenty; not too much, but push the little fellows along. If milk is to be had cheaply, put it in. Skim milk is good. If sweet, so much the better. A little bran in the milk will more than pay, as it will give the pigs that long sappy growth, put an extra kink in the tail, and a sassy look in the eye. In changing from one kind of feed to another don't change too suddenly. Especially go slow on new corn. Hogs greatly relish it, and are pretty sure to eat more than is good for them if not given careful management. Ever notice how most hog epidemics come along about the time we begin feeding new corn?

REGULAR FEEDS Be regular. Animals are creatures of habit; and good or bad decide how well they will thrive. Only regular feeding pays. Read more about this in Feeds and Feeding.

GUARD HEALTH Guard health at every turn. Healthy hogs mean healthy profits. Give plenty of pure water, not mere hog wallow. Pigs need water in addition to the slop. At two months estimate 12 lbs. of water to 100 lbs. live weight. They will require less as they grow older, decreasing to about 4 lbs. per 100 lbs. live weight at, say, eight months. It is hard to estimate the mineral contents of water, feeds, etc., but these are of special importance for healthy hogs. Remember, we have bred them away from rooting snouts, to modern short noses. So we must supply the place of mineral earth by giving free access to ash (soft coal), charcoal (charred corn-cob, Umh!), air-slaked lime, bone meal, etc. Give a little salt, for they need it. The best plan is to mix up a little of Conkey's veterinary salt according to the free formula given elsewhere in this book. Keep this mixture before them all the time and they will help themselves just as they need it. When it comes to salt, let each hog measure his own dose. It is risky business putting salt in with the slop or regular feed.

Individual Hog Trough

Hog Trough with Mud Platform. Bar can be
raised as Pigs grow larger

WHOSE HOG? Usually this is an appropriate question. Few hogs are free from lice—just take a look for yourself, back of the ears, along the neck and under the breast; they are there by right of squatter sovereignty. You may think it is your hog, but unless you get up and act for the protection of your property, the lice will keep on sucking and multiplying, and it will be nobody's hog before long. A louse is always unprofitable, wherever you find it. The louse isn't the only blood-sucker and robber. While the louse is working on the outside, there are hosts of other parasite robbers busily alive on the inside, seeing which can make most wages at the trade. You will find a good collection of pictures of these fellows in the rogue's gallery, page 204. You can judge for yourself which is the handsomest—Pin Worm, Thread Worm, Round Worm, Kidney Worm, Tape Worm, Trichina Worm, etc., etc. But here is one fact that

Prize winning Duroc Jersey Boar

covers them all, along with all external parasites—they cause nine-tenths of all swine losses, all unthriftiness, all succumbing to cholera, pneumonia, and such dreaded plagues.

WHAT'S TO BE DONE? Fortunately, this is an easy question to answer. While lice and worms are responsible for most of the losses in swine raising, these two classes of parasites can be positively eliminated from the livestock business with a little commonsense attention. But, one at a time, please:

LICE You will see the nits in all stages of incubation matted on hairs back of the ears, on neck, breast, etc. If you haven't a dipping tank or wallowing vat, go after the lice with a spray pump, or a sprinkling can, or even a scrub broom, dipped in Conkey's Nox-i-cide Dip and Disinfectant 11 — to a pail of water. Go over every part of the body; for the lice will try to hide away; and if you leave any part untouched, they will multiply rapidly and soon be swarming again over all the animal's body. With the

same mixture of Nox-i-cide Dip and Disinfectant go over the whole hog house, clean up the pens, burn the infested bedding, and spray thoroughly with the Dip and Disinfectant, 1 part to 60 parts water. Put in fresh bedding and put the clean hogs back in these quarters. In ten days repeat the whole performance, to insure getting all the nits that hatch in the meantime. Now you have a clean vermin-free hog-pen. Keep things clean, and don't let any new specimen join the herd without getting a course of the Dip treatment; otherwise you may have all the work to do over. Now fix up a scratching or rubbing post, with an old cloth on it, and keep this mop saturated with the Dip; so the hogs can attend to their own future treatment. Every once in a while look each animal over so as to be safe, and at the first sign of lice commence the above vigorous treatment.

A Fine Type of Poland-China Hog

In summer the hog vat or wallowing vat will be most convenient. A 14-inch depth will make a nice bath for the hogs; with a little of Nox-i-cide Dip and Disinfectant on the surface; this will settle the lice problem, keep the skin healthy and in the pink of condition. When the bath is fresh, the hogs will drink a little of it; which is excellent treatment for internal parasites. Such treatment with Conkey's Dip and Disinfectant means no lice, no skin disease, fewer internal parasites; and goes a long way toward insuring the herd against epidemic diseases, including the dreaded cholera.

WORMS, WORMS, WORMS! If the worms don't like your hog, that is, don't find him comfortable, they will move. You can serve them with notice to leave premises by a vermifuge

dose of Conkey's Stock Tonic, put in the regular feed for the hog. The hog will like Stock Tonic treatment, and will thrive on it, because it is an appetizer and invigorator. He will eat more; and as Stock Tonic insures digestion, he will get more food value out of the rations and will gain more. Meanwhile the vermifuge properties in the Stock Tonic will serve notice on the worms, and they will come away by hundreds. After that

your hog will get the benefit of all food fed, and you and the hog will both reap a profit. Stop feeding worms.

WINTER AND SUMMER Your hogs need special protection, winter and summer, for their coats are thin, and the scattered hairs hardly save them from burning heat or piercing cold. They are the most sensitive of all animals to cold. How they will "crowd up" the first chilly night—maybe suffocating or trampling some of their number and certainly exposing all to cold or pneumonia by getting overheated and then suddenly chilled.

HOW TROUBLE STARTS Don't fear to keep things too clean. It is a thing that can't be done, you can tell your easy-going neighbor. One careless man in the community can start an epidemic that will clean out profits on a dozen different farms. Don't stand

Individual Hog Cots for Brood Sows

in doubt, but up with the can of Conkey's Nox-i-cide Dip and Disinfectant, pour a few tablespoonfuls into a bucket of water for diluting, and disinfect everything as a preventive. It's safe to be sure. Never trust another man's hogs. Take it for granted every new animal may be an infected one, and dip and disinfect accordingly. This is the only safe way against terrible and sudden losses. See page 218 for more about Dip and Disinfectant.

MAKE SURE Great precaution should always be taken with the new boar introduced to the herd. Most successful swine husbandmen make a practice of actually quarantining a new boar for a few weeks before making use of him—no matter what the evident good health of the animal, or what the guarantee regarding his undiseased condition. If he has been shipped in, traveling in a car, there is danger of infection en route from various sources. Make sure on your own account. Use Conkey's Nox-i-cide Dip and Disinfectant according to directions with every new animal.

FARROWING If there is any one particular time when it pays to treat swine right that time is at the farrowing. It pays to give this extra necessary attention, and let the little fellows have the right start. Separate the brood sows, so that they will be free from disturbance. Separate pens in the hog house will do; but most up-to-date stockmen favor individual hog cots, which have the advantage of all possible safety and give each sow and litter better chance to thrive. Then they can be moved easily—a great advantage for cleanliness, less risk from contagion, etc. Besides, movable cots make it possible to regulate the amount of exercise for each hog family; as the cots can be moved near or far from the feeding trough to suit conditions. You may have your own notions of hog architecture; but there is nothing better in practice than the movable, sanitary, individual hog cots pictured. No. 1 has upright sides with shed roof. No. 2 has gable sides and is on skids, making it easy to move. No. 1 is about the latest in hog bungalows, and would meet the ideals of a breeder of ultra fastidious notions. Notice the scantling around the sides, a few inches up from the bottom, which makes a safe refuge for the pigs when that mountain of sow flesh heaves itself.

Each cot should be thoroughly and newly disinfected in preparation for the farrowing. If possible it should be moved to new fresh ground; if not, the old ground should be limed and freshly turned, then covered with nice clean straw—not too deep or the pigs may get lost and smother; not too long straw, as there is danger of entangling. Oat-straw or hay, and leaves, entirely free from strangling dust, will be excellent. Should the mother sow be dangerously heavy or clumsy, better take the piglets out of the mother's pen, and only give them back to her for nursing. They will do nicely in a chaff-lined box or barrel for a few days until better able to rough it. Trouble? Sure it is—but there is a certain amount of trouble necessary sometimes to save big losses. The danger from the old sow's eating her pigs can be overcome by proper feeding. Salt pork fed the old sow has usually prevented this trouble. Some breeders sponge the little pigs over with mucilage, aloe and asafetida. The best way is to save the animal from this depraved appetite by proper feeding, keeping the bowels open by means of bran, linseed meal, roots, etc., and by sufficient exercise. This is another point in favor of mixing Conkey's Stock Tonic with the feed for the brood sow; it will not only be a tonic and alterative, but will keep the bowels open and prevent abnormal craving.

THE BOAR Whether your stock is common or well bred, you cannot get the best results unless you have good pure bred males.

Put aside all hesitancy on account of cost. You won't see the first cost after you have one well bred litter. But if you can't afford the best animal procurable in your parts for sire, combine with other farmers in the same fix, in your neighborhood, and own a really fine boar in common. This is plain hog sense—not Socialism. Even very ordinary stock, if you happen to have that kind, can be graded up quickly by the use of a strictly high-grade boar. At the lowest estimate every pig sired by a pure bred

male is worth \$1.00 more than if sired by a scrub. On this basis you can estimate your high grade animal earning in the first fall—with at least twenty services, averaging six pigs to the litter—\$120. This represents the lowest possible estimate of the improvement to your original stock.

Keep in mind that a good hog will respond to good treatment, because he is bred for that. The good hog will be ready for market in three-fourths the time it takes to grow and fatten the scrub. Count this saving, when you go to purchase a high-grade boar.

Respect good ancestors, but select your boar for good individual qualities—not alone for his excellent breed. You use him as an individual, and he will transmit his individual qualities, sporting back to good and bad qualities of his dam and sire. In the individual, then, look for masculinity, strong, virile characteristics; and in addition make doubly sure that this most important, hardest worked member of your herd has natural constitution and bodily vigor. Avoid coarseness, but get strength. You can judge a good deal by general form and carriage.

Sometimes, however, a very good-seeming individual proves unfit as a sire. The first trial is the test. But if, after due experiment, the animal proves unfit, there is nothing left but to finish him for the butcher, and get a better boar. Don't foist him on any other stockman, for time is valuable to every man in this business. Be square.

One important consideration is disposition. Good manners are profitable, even in hogs. Many boars are extremely ugly-natured, fighting all the time. Sometimes this fault is due to handling in the part of the attendant or owner. But get rid of the quarrelsome boar; he's a mighty unsatisfactory animal to have around. On the other hand, a certain amount of fretfulness, restiveness, etc., is to be expected from the vigorous animal in breeding season. He should be given special attention. Note what is said about feeds and feeding, page 54. Not properly managed at this time, he may be ruined in disposition and become unmanageable.

A boar can hardly reach maturity before twelve months; and as a sire, should be considered in his prime from one to five years old. Do not use him, except for limited purposes of exercise and test, before one year old, or he will be injured in growth and cannot be counted on for future vigorous off-spring. Patience is necessary sometimes in inducing the animal to perform his first service. Only one service should be allowed to a sow, as more will increase neither the number nor the vigor of the brood, opinions to the contrary notwithstanding.

THE SOW In the same way, the sow should not be used before she has a full year's growth. Make haste slowly, if you want usefulness, strong pigs and full litters. Feed the brood sow throughout the 112 days' gestation period with a good balanced ration to provide bone and fat forming material for her little ones. Read page 54 on feeds and feeding. Remember that any food having some element out of proportion to the natural needs of the animal body will result in (1) waste of that surplus element, of (2) in over development of that part of the body, with corresponding deficiency in another. The food the sow gets before farrowing determines the character of her pigs. Food high in ash will make the little ones all frame and weak in flesh. Food high in fat and low in ash—chances are the pigs will be over fat with no frame to support them, and what frame they have, built at the expense of the sow's bone material; so that her skeleton will be "soft" and liable to easy fracture.

Read carefully pages 52-55 on feeds and feeding and **FEED A BALANCED RATION**.

Remember your brood sows especially need exercise. In winter it will be hard to make them take this through the snow. So instead of letting your hogs feed from the troughs and then immediately return to their comfortable beds, keep them on their feet by a new system entirely; make paths in the lot so they can easily travel through the snow, and then scatter their food in the paths. They will spend considerable time collecting it, and on account of the exercise and pure air, tend to much heartier feeding.

Be good to the good sow. When she proves herself a good mother with nice litters of healthy offspring, and gives them plenty of nourishment the first week—for on this right start so much of their future profitable development will depend—when she does this, get out your memorandum book and pencil and count up what she is worth to you, according to whether she farrows once or twice yearly. When you see it all down in your own figures, black and white, then you'll vote her a little life insurance and care for her the best you know how. Well cared for in good comfortable, disinfected quarters (see page 190 on Conkey's Nox-i-cide Dip and Disinfectant); free from lice (see pages 192 and 200, also pages 218 and 219 on Nox-i-cide Dip and Disinfectant); thriving and well-fed (see pages 52 to 55, also pages 193 and 207 on Conkey's Stock Tonic); she will keep up her constitutional vigor maybe ten years or more, and will represent a small fortune for an appreciative owner.

Common Diseases of Swine

ABORTION This is rarely a contagious disease with sows, but moldy, fermented foods have been known to cause it. Careful feeding with wholesome food is a preventive. Also avoid salting the slop and in every case leave the salt where the sows can help themselves as they want it. This is the only safe way to insure their getting what they need and not too much.

BARRENNESS Get the sow in healthy condition by the use of Stock Tonic in the regular feed. This is tonic, alterative treatment. Do not give any other medicine but once a day for 2 or 3 weeks before breeding her flush out the vagina with a gallon of tepid water, in which is dissolved 1 dram of permanganate of potash. Use a rubber tube and funnel for this operation. Mate the sow about 6 or 7 hours after flushing.

**CANKER—
SORE MOUTH** Young pigs are the worst sufferers from this trouble, which usually comes in winter. First symptoms are loss of appetite and running saliva at the mouth. The gums are sore, sometimes so badly affected that the teeth drop out. The jaws swell, crack and scabs form on mouth and snout. If the disease spreads, it affects the nasal cavities and causes "snuffles." If it spreads to the stomach and intestines it sets up a very foul diarrhea. The animals may die in one week or linger for four or five weeks.

Treatment is pretty sure when followed as directed: first separate the sick animals, clean up and disinfect thoroughly with a solution of Nox-i-cide Dip and Disinfectant, 1 teaspoonful to a pint of water. With a solution of half this strength swab out the mouth, which will get rid of the patches of dead and diseased tissue. Instead of swabbing, you can duck the head into a pail of water containing $\frac{1}{2}$ cupful Nox-i-cide Dip and Disinfectant. If the mouth is very sore treat in addition with Conkey's Pain Lotion, spraying or swabbing. Repeat above treatment daily until cured.

**CATARRHAL RHINITIS—
ACUTE CHORYZA** The general symptoms are those of cold, with sensitiveness to cold. Sometimes chills are a symptom, with inflammation of the eyes and running at the nose. Usually there is no appetite and the animal is very constipated. The running at the nose changes later to a thick, clogging substance, making breathing difficult, and the animal snuffles. This disease is also called "snuffles," being one of three totally different disorders which are given that popular name. Usually the attack is over in a week or two, but if neglected the animal may fall victim to some disease, such as bronchitis, pneumonia, catarrh, etc.

Treatment Put the animal on sick diet and see that it has warm, clean, well lighted quarters. If possible get it into the sunlight part of the time. Give a purge, such as 1 to 2 oz. Epsom salts. Then mix with the feed Conkey's Stock Tonic, which will tone and invigorate the system, and at the same time keep the bowels from clogging. Prepare the milk or slop for sick hogs with extra care and warm slightly. For the nasal discharge, also for the sore throat, etc., a tablespoonful of Conkey's Nox-i-cide Dip and Disinfectant to a gallon of pure, clean water will be found very

helpful, and given twice a day, or put where the hog can help himself anytime. If you have a closed shed for the hog try burning tar as a fumigant, as this will help to clear the nasal passages.

CHOLERA We may as well call Hog Cholera and Swine Plague one and the same disease. In Hog Cholera it is the intestines that show most affection, and in Swine Plague the lungs. But the general symptoms are very similar and the directions for controlling Hog Cholera serve also for Swine Plague. In a case where Hog Cholera is suspected one of the dead animals should be cut open and if red spots and raised ulcers are found on the lining of the intestines, especially of the large intestines, the case is true cholera. You cannot always tell by general symptoms, although in acute cases the hog has fever, is dull, wants to lie down constantly, shows gluey, sticky discharges of the eyes, with a watery diarrhea. Death comes quickly, usually in a few days. All discharges of the sick animal are highly infectious, especially the urine, although the germ itself is so small, it has never been seen by the most powerful microscopes. As we have said, all discharges are infectious and will spread the disease to other animals, or pollute the ground so that it cannot be safely used for three or four months. The dead body is also infectious and should be burned or buried in quick lime. If simply buried it may be drained by the next rain-storm and the deadly germs will pollute the first stream and carry the plague. Tarring and feathering is too good for the man who simply dumps his dead hog in a hole, or carts it off to the woods. He is an anarchist and is waving a bloody flag over every farmer and stockman in the community.

Treatment You can control Hog Cholera by the following treatment: In the first place, throughout the hog quarters use Conkey's Nox-i-cide Dip and Disinfectant, which is a perfect germicide. Occasionally mix a little with the slop feed, one pint to one quart to a barrel of slop is the right proportion. Keep all troughs, utensils, etc., clean, using Nox-i-cide Dip and Disinfectant in the wash water. Provide warm dry sleeping quarters. See that all water is pure. Improper feeding, unsanitary condition of the hog lot, damp or cold sleeping quarters, dirty drinking and feeding utensils, will predispose the herd to this disease, simply by lowering the general vitality so that they fall easy victims. On the other hand, Conkey's Stock Tonic in the feed will build up constitutional vigor and the Stock Tonic is a fortifying tonic. It will keep the organs and blood in condition, hence give the animal resisting power. Keep the herd away from the public road and have your hog lot on a part of the farm where men or animals from other farms will not pass through it. All new animals, or stock exhibited at shows, fairs, etc., should be quarantined away from the herd for at least one month, so as to make sure there is no infection.

Hogs that have recovered from Hog Cholera are immune. From such hogs it is possible to prepare a serum for inoculating other hogs as a preventive of this disease. This work is under government supervision and the serum can be obtained on application to the nearest experiment station. Usually the first treatment when applied to the whole herd immediately on the outbreak of Hog Cholera will make the exposed animals permanently immune. If not exposed for some weeks, the immunity may, and usually does, disappear. According to the method of inoculation, the hog treated will thus be immune from Hog Cholera (1) for at least several weeks, or (2) permanently.

Warning Did you ever hear from anyone who could sell you a sure Hog Cholera Medicine? That man is not working in the spirit of either science or law. It is actually proved that no medicine can positively attack the germs of Hog Cholera or Swine Plague. Our own Stock Vigor cannot itself kill the germ of Hog Cholera, but it will correct the digestive trouble and fortify the animal to resist the disease. No remedy on the market can truthfully make a stronger claim. Fortunately most cases of Hog Cholera are not true cholera. Conkey's Stock Tonic is the proper remedy for any of the common outbreaks of digestive disturbances usually called Cholera. If you fear that the case is true Hog Cholera make a postmortem examination of the first hog to die and if the button-like ulcers are found in the intestines, at once notify the proper authorities, for no so-called Cholera-cure will help you.

Use Conkey's Nox-i-cide Dip and Disinfectant freely, and Conkey's Stock Tonic in doses as directed on packages, mixed with the regular feed.

COTTONSEED POISONING Cotton meal is fine for hogs, but if given in a heavier ration than $\frac{1}{4}$ of a pound a day to 50 pounds live-weight, there is pretty sure to be trouble from cottonseed poisoning. The animal will show signs of "thumping" (see Thumps), that is spasmodic jerking of the whole body. If the owner takes warning and cuts off the cottonseed there is no further trouble. But neglect will usually end in death from suffocation in 4 to 10 weeks.

INDIGESTION This may come from worms, or from a sudden change in quantity or manner of feeding, or from irregularity in feeding, or from wrong kinds of feed, especially too much rich food. The symptoms are loss of appetite, bloating, uneasiness, sometimes cramps, scouring, often coughing and thumping or jerking of the body. Often there is a depraved appetite, the hogs eating such substances as old plaster, rotted boards, stone, dirt, etc. Often they will squeal desperately for food but will not touch it when offered. Young pigs will often show no loss of appetite but will fail to thrive in spite of a plentiful ration.

Treatment Look for the cause of trouble in the system of feeding. If too rich or too much food, or too sudden a change, correct the trouble. Then mix with the feed Conkey's Stock Tonic according to directions. This is tonic treatment and will bring the hogs around to thriving condition. It will also get rid of worms if worms are the cause of the trouble. In the case of young pigs which are stunted, change from hard to soft feed.

LICE Lice do not come from filth, but they stay where filth is. Lice come from the louse-eggs which you often see fastened with a gummy substance to the bristles of the hog—sometimes as many as five or six eggs on a single hair. Look for them back of the ears, on the neck, breast, etc., especially in the spring, and it is well to keep a sharp lookout for them all through summer. It will not pay to spend good time and care and feed on raising hog lice, and it is entirely unnecessary to put up with them as treatment is very effective as follows:

Hog louse and eggs attached to bristle

Treatment Dip, scrub or spray with Conkey's Nox-i-cide Dip and Disinfectant according to directions on package and also as advised page 193 on Swine. Repeat the operation in a week or ten days in order to kill every nit. These nits hatch out after the first dressing and unless you go after them lice will soon be swarming over your hogs once more. Nor is this all. Go over every part of the hog quarters and clean up and disinfect thoroughly with the Nox-i-cide Dip and Disinfectant, using a spray pump or sprinkling can. Clean up and whitewash the sleeping places, pens and houses. Let no new animal join the herd until thoroughly examined and treated for lice. With clean hogs, clean quarters and regular use of Nox-i-cide Dip and Disinfectant you can keep out of the lice problem.

KIDNEY WORMS

This worm is often blamed for symptoms of paralysis, but there is no proof. However, it does enough mischief otherwise, in time completely destroying the substance of the kidney. Not much is known of the kidney worm, although it is very large, the female measuring 3 ft. in some cases, but usually much less. The male is about 12 inches long. The egg is passed in the urine, and its presence is the only sure proof of the worm, except post mortem examination. No medicine will reach kidney worms, hence there is no treatment.

Kidney worm

MANGE

This is a common itching skin disease of swine, caused by a parasite which buries itself below the surface, irritating the skin and forming blotches and pimples, usually very much inflamed and filled with pus. These form into crusts and scabs, usually appearing first about the eyes and ears, but quickly spreading down the neck to the lower part of the body. Sometimes scabs completely cover the body. Itching is intense and young pigs often die from the irritation; in any case there is great loss of flesh. This disease is contagious and will spread to the whole pen or yard. The animals will rub and scratch themselves on posts and corners, thus helping to spread the infection.

Treatment The hogs not affected should be separated from the others and the affected animals and the old quarters should be put through a thorough course of Conkey's Nox-i-cide Dip and Disinfectant treatment. Dipping in a solution of Nox-i-cide Dip and Disinfectant as directed is the simplest treatment, but if the weather is cold or the herd is small the best plan is to scrub each animal, using an old broom dipped in the solution according to directions. In a week or ten days repeat the treatment. Where the herd is fairly large a spray pump will be found convenient for treatment. With the same solution of Nox-i-cide Dip and Disinfectant go over the quarters thoroughly. Clean up thoroughly and whitewash. This will put the infected quarters in good condition. Saturate old clothes with Nox-i-cide Dip and Disinfectant, using double strength, and fasten these to the rubbing posts or scratching corners, so that when the pigs scratch themselves they will heal instead of irritating the part.

There is another kind of mange not commonly understood. The parasite in this case attacks the hair follicles so that we call this "follicular mange." The parasites work deep down into the roots of the bristles so that it is almost impossible to reach them with an ordinary skin application. A practical plan is to market such affected animals before they lose market condition. The dip treatment above is the only possible treatment for this

kind of mange, but it is necessary to make many and frequent applications of the Dip and Disinfectant to make sure of getting the liquid well down into the open pustules or sores.

MILK FEVER This is not so common with sows as with cows. The best advice is to prevent all danger of milk fever by feeding lightly just before and after farrowing, using Conkey's Stock Tonic with the feed to keep the bowels open. Also give plenty of exercise before farrowing.

PARALYSIS—LOSS OF POWER The animal first loses control of its hind legs and has to drag its body along on the front feet only. But the paralysis steadily creeps over the whole body. The animal feeds about as usual and seems to feel otherwise well, and does not lose condition until the last stages of the disease. It used to be thought that this trouble came from kidney worms but of this there is no proof. The probable cause is wrong feeding, especially too heavy feeding of corn.

Treatment Instead of the common practice of firing, sinking a red-hot iron $\frac{1}{8}$ inch in diameter about 2 inches deep, so as to get past the fat, into actual muscle, we advise simple, humane treatment with Conkey's Absorbent used as a counter irritant, rubbed briskly along the spine over the whole loin. In addition correct the feed, cutting off all corn and giving Conkey's Stock Tonic in the feed, which should be light and rather laxative. Stock Tonic will correct the digestion and the disturbed circulation. In addition, if constipation is a bad symptom, give an injection of soap or oil with warm water, using a rubber tube and funnel, as elsewhere described.

RICKETTS This usually shows in your pigs as stunted growth, lameness and large joints, especially swelling of the hock and pastern. Sometimes these enlargements appear on the nasal and maxillary bones, causing hard breathing and what is called "bull" nose and "snuffles." The pigs continue to get lean, grow weaker and weaker and are easy marks for such diseases as pneumonia or enteritis.

Treatment The whole trouble is with the bones, due to wrong feed or bad digestion of food. There is not enough lime in the food to make the bony skeleton hard and solid. Starch foods increase the trouble but good rich food high in nitrogen is especially needed. Feed middlings and bran, bone meal, and milk with lime water added. Mix with this feed Conkey's Stock Tonic, according to directions. Clean up the quarters, let in sunlight and fresh air, and force the animals to exercise.

SCOURS Scouring or diarrhea in pigs shows fault with the feed. The feed may be too much or too rich, but usually the fault is with the quality of the food. For instance, mouldy feed, or fermented slop very often causes diarrhea. Or, feeding from troughs that are not kept sweet and clean may cause scours.

Treatment First find the cause of the trouble, examining feed and the feed troughs. Use Conkey's Nox-i-cide Dip and Disinfectant and thoroughly clean out and disinfect all feeding utensils, which will kill the germs. Watch the feed carefully, making sure it is sweet and clean and

for a time put the pigs on milk, adding one ounce of lime water to each quart. Then gradually add middlings, then cornmeal and flaxseed meal.

THUMPS This is a spasmodic action of the diaphragm in young pigs and is most common with fat and thriving porkers. Sometimes it starts suddenly after heavy eating, but worms or any digestive disorder may cause it. There is spasmodic, violent jerking of the body, similar to hiccoughs in human beings. The animal takes little or no food or exercise and loses condition. Sometimes it is permanently stunted.

Treatment The one treatment is to restore good digestive order. This means mixing Conkey's Stock Tonic in the feed, or slop, 1 tablespoon to every 8 hogs. If worms are the cause, Conkey's Worm Remedy will get rid of them. Stop feeding corn and feed instead light slop mixed with milk—for instance, middlings, ground oats, barley meal, bran, flaxseed meal. As they improve, add a little corn meal and 10 per cent. digester tankage. After complete recovery see that a veterinary salt is kept in a dry place where the hogs can help themselves to it any time. Make this veterinary salt as follows: Common barrel salt, 45 lbs., Stock Vigor, 5 lbs., mix thoroughly. Where indigestion is the cause be sure to give less food, more charcoal, or wood ashes and more daily exercise. Use Conkey's Stock Tonic for treatment as it will help digestion, tone up the organs and gradually the hog can be put back on the heavy fattening ration.

TUBERCULOSIS Hogs usually become affected with tuberculosis from following infected cattle or from being fed skim milk which is infected. Next to cattle, swine are the most liable to tuberculosis, probably because they are pushed hard for production, just as dairy cattle are, and the constitution is weakened. Do not let your hogs follow cattle that have not been tuberculin tested, and use no creamery by-products unless they are positively sterilized. Young stock, and stock not full of natural vigor, are most liable to get the disease. Sometimes the disease does not show for a considerable time. Usually there is a cough, especially after drinking or exercise and most often in the morning. There is quick breathing and the glands of the neck enlarge, with general digestive disturbance and wasting away.

Treatment Treatment is not practical on account of the danger of spreading infection. But prevention is the real wisdom, that is: Keep your stock vigorous and well, able to ward off disease in general. Provide plenty of fresh air in barn or stable; use plenty of Conkey's Nox-i-cide Dip and Disinfectant around the hog quarters, put a little in the swill feed occasionally, about a pint to a quart per barrel. Build up constitutional vigor with occasional use of the Stock Tonic whenever the animals show any sign of sickness. During fattening period it would pay to use Stock Tonic regularly to insure proper digestion. A hog that's a hog will eat more than it can digest naturally; that is why hogs under the strain of fattening for the market should always be given Conkey's Stock Tonic to insure full use of the liberal feed given. Remember also that breeding animals are under severe strains, hence are liable to tuberculosis infection. Stock Tonic is just the tonic and alterative needed by breeding animals.

WORM BRONCHITIS Young growing pigs are sometimes affected with lung worms. The first signs of trouble are violent fits of coughing, which may keep up for weeks. The animal loses growth, in fact, often becomes permanently stunted. Inflammation

of the bronchial tubes is noticed and if one of the worst affected animals is killed and the bronchial tube is opened lengthwise you will find a great number of small round thread worms about 1 inch long.

Treatment This is a hard disease to treat because it is hard to get a vermifuge into the head chambers. A teaspoonful of turpentine in the slop taken three times a day has so far given best results, numbing the worms so that it is easier to dislodge them by coughing. But prevention is the best advice. Take care not to buy any young pigs affected with worms and keep the young stock from running on low marshy ground and drinking from pools in suspected pastures. Treat all affected animals with Conkey's Stock Tonic mixed with the regular feed, and give occasional doses to all animals as a general preventive for it is easier to keep the worms from developing than it is to get them out after they get into the bronchial tube.

Intestinal worm of the hog
(*strongylus dentatus*)

Round worm. Most common internal
parasite of the hog

WORMS Worms, worms, worms! Few hog owners realize the number and kind that afflict swine, breaking down constitutional vigor and cutting down profits. Just about half the diseases of swine are due to worms, worms, worms. Kidney Worms, Pin Worms (in the rectum), Long Thread Worms (in large intestine), Round Worms (in intestines), Thornheaded Worms (in intestines), *Strongylus Dentatus* (in the intestines),

Hog trichina—1. Male. 2. Female and young.
3. Young trichina worms encysted in
muscle fibre.

Hog tapeworm (adult)

Spiroptera Strongyline and *Sclerostotum Dentatum* (in the intestines), are a few only of these disgusting and damaging parasites. There is no sense in putting up with their presence, as all but the Kidney Worm can be successfully treated with Conkey's Worm Remedy where active treatment must be resorted to. In general, tonic treatment with Conkey's Stock Tonic mixed with the regular food will be all that is necessary as the Stock Tonic includes vermifuge properties. Get after the worms, the little ones, the big ones, the so-called "harmless" and those known to be positively dangerous. Get after them all, for all of them are profit sappers. Don't pay high prices for feed and let it go simply to feeding worms. Read carefully page 193 on these parasites.

Common Measures

60 drops equal 1 teaspoonful.
 4 teaspoonfuls equal 1 tablespoonful.
 8 teaspoonfuls equal 1 ounce.
 4 ounces equal 1 gill.
 4 gills equal 1 pint.
 2 pints equal 1 quart.
 4 quarts equal 1 gallon.
 3 gallons (about) equal 1 pailful.

To Make a 1% Solution

(1 Part to 100)

$\frac{1}{2}$ teaspoonful to 1 tumbler of water.
 1 teaspoonful to 1 pint of water.
 10 teaspoonfuls to 1 gallon of water.
 $\frac{1}{2}$ tumbler to 1 pail of water.
 1 tumbler to 6 gallons of water.
 1 pint to 12 gallons of water.

Doses

Colt, 1 month to 5 months	—	$\frac{1}{16}$	adult dose	—	Calf, 1 month to 3 months	—
" 5 " " 9 "	—	$\frac{1}{8}$	" "	—	" 3 " " 6 "	—
" 9 " " 18 "	—	$\frac{1}{4}$	" "	—	" 6 " " 1 year	—
" 18 " " 3 years	—	$\frac{1}{2}$	" "	—	" 1 " " 2 "	—

For horses, after 3rd year give full dose; for cattle, full dose after 2nd year. Full dose is usually the same for horses as for cattle; except in case of solids, when for cattle it is well to increase the dose $\frac{1}{2}$. Full grown sheep at 2 years, takes about $\frac{1}{4}$ dose for horse or cattle. Full grown pig at 18 months, takes about $\frac{1}{4}$ dose for horse or cattle.

Gestation Table

Time of Service	Mares 340 Days	Cows 283 Days	Ewes 150 Days	Sows 112 Days	Time of Service	Mares 340 Days	Cows 283 Days	Ewes 150 Days	Sows 112 Days
January 1	Dec. 6	Oct. 10	May 30	April 22	July 5	June 9	April 13	Dec. 1	Oct. 24
" 6	" 11	" 15	June 4	May 27	" 10	" 14	" 18	" 6	" 29
" 11	" 16	" 20	" 9	May 2	" 15	" 19	" 23	" 11	Nov. 3
" 16	" 21	" 25	" 14	" 7	" 20	" 24	" 28	" 16	" 8
" 21	" 26	" 30	" 19	" 12	" 25	" 29	May 3	" 21	" 13
" 26	" 31	Nov. 4	" 24	" 17	" 30	July 4	" 8	" 26	" 18
" 31	Jan. 5	" 9	" 29	" 22	August 4	" 9	" 13	" 31	" 23
Feb'y 5	" 10	" 14	July 4	" 27	" 9	" 14	" 18	Jan. 5	" 28
" 10	" 15	" 19	" 9	June 1	" 14	" 19	" 23	" 10	Dec. 3
" 15	" 20	" 24	" 14	" 6	" 19	" 24	" 28	" 15	" 8
" 20	" 25	" 29	" 19	" 11	" 24	" 29	" 2	" 20	" 13
" 25	" 30	Dec. 4	" 24	" 16	" 29	Aug. 3	" 7	" 25	" 18
March 2	Feb. 7	" 9	" 29	" 21	Sept. 3	" 8	" 12	" 30	" 23
" 7	" 12	" 16	Aug. 3	" 26	" 8	" 13	" 17	Feb. 4	" 28
" 12	" 17	" 21	" 8	July 1	" 13	" 18	" 22	" 9	Jan. 2
" 17	" 22	" 26	" 13	" 6	" 18	" 23	" 27	" 14	" 7
" 22	" 27	" 31	" 18	" 11	" 23	" 28	July 2	" 19	" 12
" 27	Mar. 1	Jan. 3	" 23	" 16	" 28	Sept. 2	" 7	" 24	" 17
April 1	" 6	" 8	" 28	" 21	October 3	" 7	" 12	Mar. 1	" 22
" 6	" 11	" 13	Sept. 2	" 26	" 8	" 12	" 17	" 6	" 27
" 11	" 16	" 18	" 7	" 31	" 13	" 17	" 22	" 11	Feb. 1
" 16	" 21	" 23	" 12	Aug. 5	" 18	" 22	" 27	" 16	" 6
" 21	" 26	" 28	" 17	" 10	" 23	" 27	Aug. 1	" 21	" 11
" 26	" 31	Feb. 2	" 22	" 15	" 28	" 2	Aug. 6	" 26	" 16
May 1	April 5	" 7	" 27	" 20	Nov. 2	" 7	" 11	" 31	" 21
" 6	" 10	" 12	Oct. 2	" 25	" 7	" 12	" 16	April 5	" 26
" 11	" 15	" 17	" 7	" 30	" 12	" 17	" 21	" 10	Mar. 3
" 16	" 20	" 22	" 12	Sept. 4	" 17	" 22	" 26	" 15	" 8
" 21	" 25	" 27	" 17	" 9	" 22	" 27	" 31	" 20	" 13
" 26	" 30	Mar. 4	" 22	" 14	" 27	Nov. 1	Sept. 5	" 25	" 18
" 31	May 5	" 9	" 27	" 19	Dec. 2	" 6	" 10	" 30	" 23
June 5	" 10	" 14	Nov. 1	" 24	" 7	" 11	" 15	May 5	" 28
" 10	" 15	" 19	" 6	" 29	" 12	" 16	" 20	" 10	April 2
" 15	" 20	" 24	" 11	Oct. 4	" 17	" 21	" 25	" 15	" 7
" 20	" 25	" 29	" 16	" 9	" 22	" 26	" 30	" 20	" 12
" 25	" 30	April 3	" 21	" 14	" 27	Dec. 1	Oct. 5	" 25	" 17
" 30	June 4	" 8	" 26	" 19	" 31	" 5	" 9	" 29	" 21

Conkey's Stock Remedies

**Every Conkey Remedy MUST
SATISFY YOU or MONEY BACK**

- Conkey's Stock Tonic**—For Cows, Calves, Horses, Sheep and Swine. Formerly called Stock Vigor. Vigor means Profit! Prices, 25 lb. pail, \$3.50; 12 lb. pail, \$2.00; 5 lb. pkg., \$1.00; 2¼ lb., 50c; 1 lb., 25c.
- Conkey's Worm Remedy**—A prompt and powerful remedy for stock badly infected. Price 50c.
- Conkey's Horse Tonic**—A stimulating medicine for debilitated and exhausted conditions. Put out especially for fine bred horses. Price \$1.00. In West and Canada, \$1.25.
- Conkey's Heave Remedy**—Corrects digestive disturbance as well as nervous derangement. Tones organs back to health. Price \$1.00.
- Conkey's Colic Remedy**—A life saver and should be on hand for emergency. Prices 50c and \$1.00.
- Conkey's Fistula and Poll Evil Remedy**—Effective and very humane. Price \$2.00.
- Conkey's Eye Remedy**—For sore, inflamed or weak eyes. Price 50c.
- Conkey's Distemper and Cough Remedy**—For all cases of cough, cold, chill and fever, epizootic, distemper or strangles, pink eye, etc. 50c and \$1.
- Conkey's Healing Powder**—A wonderful gall cure. For chafes, sores, etc. A perfect dry dressing (antiseptic) for surgical cases. Prices 25c and 50c.
- Conkey's Gall Salve**—A healing ointment for sores, cuts, harness and saddle galls, chafes, etc. Prices 25c and 50c.
- Conkey's Warming Liniment**—Useful for emergencies. Excellent for man or beast. Price 50c.
- Conkey's Pain Lotion**—For soreness, throbbing pains, inflammation, cuts, wounds, burns. Price 50c.
- Conkey's Hoof Remedy**—Keeps your horse's hoofs in nice shape, thus preventing accidents. Prices, pt., 50c; qt., 75c; ½ gal., \$1.25; 1 gal., \$2.00.
- Conkey's Absorbent**—Takes place of blistering and firing. Cures lameness. Removes blemishes. Price \$1.00.
- Conkey's Bag Ointment**—A penetrating, softening application which soothes quickly. A remedy for many bag troubles. Prices 25c and 50c.
- Conkey's Fly Knocker**—Sprayed on cows, horses, etc., keeps flies and other pests away. Kills every fly it hits. Doesn't taint the milk or injure the animal in any way. Prices, qt., 35c; 2 qts., 60c; 1 gal., \$1.00; 5 gal., \$4.00. For Canada and Western prices see page 217.
- Conkey's Nox-i-cide**—Kills germs, prevents disease. A dip, disinfectant, spray and lice killer. Prices, \$1.25 gal.; ½ gal., 75c; qt., 50c. For Canada and Western prices see page 219.
- Conkey's Poultry Remedies**—See list, page 220.
- Conkey's Dog Remedies**—See list, page 222.
- Conkey's Special Remedies**—See list, page 223.

"Salt-Em"—See page 223.

**REMEMBER! Every Conkey Remedy MUST SATISFY YOU
or MONEY BACK.**

The G. E. Conkey Company
CLEVELAND : U. S. A.

Conkey's Stock Tonic

Formerly called Conkey's Stock Vigor

First and most important of all Conkey preparations for internal treatment is this one best general conditioner for livestock, Conkey's Stock Tonic.

This is not a food but a medicine. It does not even contain any filler, but is all medicine. You mix it in spoonfuls or less with your regular feed from your own feed bins. This makes your own stock food, at home prices. All you pay for in the package is medicine, all specific tonic for HORSE, DAIRY or BEEF cattle, SHEEP and HOGS. This tonic will condition your stock, make them healthy and vigorous and enable them to do more for you. It is tonic, alterative treatment, improves the appetite, insures full digestion, keeps the system open; keeps the animals worm-free.

There are two uses for Conkey's Stock Tonic: When any animal is run down, off feed, listless, do-less, not thriving in spite of feed and care, debilitated from some disease, then use Conkey's Stock Tonic, in small doses according to directions to bring the animal back to health. Or, for all stock under strain of special production, such as DAIRY COWS that are heavy feeders and milkers; "FEEDERS," whether CATTLE, SHEEP or SWINE, that are being fattened and finished off for the butcher, all brood mares, freshening cows, ewes, sows; all stud animals under heavy service; in fact for ALL LIVESTOCK, use Conkey's Stock Tonic to ease the strain of heavy production and keep the animals fine and fit.

The whole point is this: Livestock to be profitable MUST be kept under unnatural conditions. They MUST be given expensive feed, expensive care, and in general they MUST be under-exercised and rather over-fed in order to push them to the limit of healthful production and show good profit. Every animal, to be profitable, must show in the SHORTEST POSSIBLE TIME the MOST POSSIBLE MARKETABLE PRODUCT.

Now: The more feed you get into your cattle and swine, without upsetting their appetites, the MORE MONEY you get out of them. Now, again: No use to feed unless the stock can do their part and turn each pound (over and above what is called a maintenance ration) into some product that will mean YOUR PROFIT. Nature would keep digestion perfect so long as you feed moderately well and exercise a plenty—but Nature's way won't make money for you. It is what you feed over and above "natural appetite" that MAKES MONEY for you. Your problem is this: How to feed for profit and yet not upset natural functions and run the risk of loss from disease.

Remember that PROFIT in livestock means a short life but a PRODUCTIVE one. Keep in mind the fact that in Holland, the home of the Holsteins, these cows are not allowed to live beyond eight vigorous, productive years. Scientific managers crowd each animal along, push to the limit, feed amazingly but milk accordingly and after this short term of years finish each record-breaker off for the butcher and spend their valuable time on younger stock. This is simply business management applied to livestock.

The difference between profit and loss is mostly a matter of feeding. The less an animal eats the less it can earn for you. The more it eats the more surplus it can turn into profit—provided it digests all it eats and gets the full value out of the feed. When you feed heavily for heavy production you simply must give your animals help of some sort, or you are sure to have a heap of trouble with indigestion. We have explained how a large

class of dangerous diseases can be absolutely prevented simply by killing the germs which cause them. There is another large class of diseases which come, one and all, from imperfect digestion. Let an animal be overtaxed in its digestive system, let the vital organs be weakened, let the system be clogged by poisons and waste which poor blood cannot flush out of the body, and any one of a dozen serious diseases is liable to result. These diseases differ greatly in their outward symptoms, sometimes the effect is shown in one part sometimes in another. The digestive system is the basis of health in the animal's body. The clogged system becomes a hotbed for dangerous germs, with heat and moisture making just the right conditions for rapid, often fatal development.

Such diseases as Abortion, Barenness, failing to clean (Retained After-birth), Milk-Fever, etc., etc., so common in dairy herds, can be practically prevented by the use of Conkey's Stock Tonic.

Keep the digestion perfect, keep the system open if you would avoid disease. Conkey's Stock Tonic insures full digestion, keeps every organ vigorous, keeps the blood clean. It helps the appetite, makes a poor ration more palatable, puts every bit of nutritive matter in form for the body to use it, makes the least possible waste. It also expells worms, which in the treatment of livestock is very important since worms alone cause many digestive troubles. Blood sucking worms do absolutely no good in your animal's body, but sap its strength and vitality, waste expensive feed for you, in time make any animal fail to thrive.

So we say to you that you need Conkey's Stock Tonic. You need this conditioner for your horses, for your dairy cows, for your feeding cattle and for your sheep and hogs. You need Conkey's Stock Tonic to make your livestock pay.

Get it, make a test of it. No risk about it. Ever Conkey package under satisfaction guarantee. Your money back if you are not absolutely satisfied with results.

Prices—1 lb., 25c; 2¼ lbs., 50c; 5 lbs., \$1.00; 12 lb. pail, \$2.00; 25 lb. pail, \$3.50.

Home-Made Stock Salt

All animals need salt. The best plan is to have salt where the farm animals can help themselves anytime. Then they will take just what they need, each animal being guided by instinct. But when salt is given only occasionally they are pretty sure to take more than is good for them, if they can get it; and scours, etc., will result. The following is a home-made medicinal Stock Salt that for beneficial results cannot be beaten by any formula, and for cheapness would put the commonly advertised stock salts far in the shade, costing less than 2½c per pound.

Take common barrel salt which costs less than one-half cent per pound. Mix with one part Conkey's Stock Tonic to nine parts salt. For instance, 90 pounds salt, with 10 pounds Conkey's Stock Tonic (2 packages at \$1.00). Mix thoroughly, keep dry, and place where all animals can help themselves. This salt mixture will keep livestock free from worms, help digestion and appetite. It will increase the thriving, vigorous condition of all animals, whether horses, cattle, sheep or swine. Let each animal help itself, then each will get enough and none of them will overeat. Sheep and swine will take less than horses or cattle. Swine will take least of all but swine should have salt where they can get at it. Salt for swine should never be mixed in their slop for there is danger of poisoning them if they should get too much.

Conkey's Worm Remedy

This is our specific remedy for worms. All domestic animals are natural "hosts" for worms. An animal may keep alive and fairly comfortable and still be internally a mass of writhing, bloodsucking parasites. But no animal can be really profitable to the owner if it is burdened with worms. The feed fed is fed to the worms. They attach themselves to the walls of stomach and intestine and absorb the nutriment before the animal has a chance to get it. The animal fails to thrive and has a rough, staring coat, in spite of a ravenous appetite. Often the mature worms are expelled in the dung, or dead fragments are found in the droppings. The animal shows a depraved appetite, as well as being always hungry, and will eat rotting board, mortar, filth or other unfit substances. Sometimes violent pains are caused by the presence of worms, as in colic of horses.

It is easy to keep your stock worm free by the right Stock Tonic treatment all the time. But if this matter has been neglected for some time and the animals are found to be already infested, there is only one thing to do,—treat promptly and actively with a powerful worm killer and expeller—i. e. Conkey's Worm Remedy. This remedy expels all kinds of worms, and not merely the "harmless" ones. Strictly speaking no worm is "harmless" for they are profit sappers every one, although many are much less serious than the dangerous, ulcerating kind. Look out for worms and take measures to rid your stock of such parasites promptly. Conkey's Worm Remedy is an absolutely reliable, guaranteed treatment. Satisfy yourself at our risk. Get a package today if any of your animals show signs of worms. You will be fully repaid for the purchase. Besides, every Conkey package sells on agreement of money back if for any reason you are not fully satisfied.

Price—50c, postpaid.

Conkey's Horse Tonic

Here is an exceedingly valuable tonic, a vegetable compound—one bottle is as good as six weeks on grass.

For high bred animals convalescing from debilitating diseases, for mares after foaling, no medicine equals Conkey's Horse Tonic. It corrects digestion, increases the appetite, helps the action of the natural acids and alkalies in the alimentary canal, helps every organ to do its work. It has a special effect on the nervous system and is just the stimulating tonic necessary in any depressed condition or in case of exhaustion from any cause. An excellent treatment for race horses, for stud animals and brood mares.

Sold on the well known Conkey agreement, your money back if you are not absolutely satisfied with results.

Price—\$1.00. In West and Canada, \$1.50.

Conkey's Heave Remedy

Any treatment which corrects digestion and strengthens the nerves, will cure any mild or recent case of heaves, provided the horse is always properly watered and fed. Many cases of heaves are easily and quickly cured simply with Conkey's Stock Tonic treatment for indigestion.

But, the real test of a Heave Remedy is a bad case of chronic heaves!

Some horses inherit a disposition to heaves, asthma and broken wind, on account of narrow chests. But most cases are due to eating clover hay or other irritating fodder, such as mouldy or dusty hay, or to working too soon on a full stomach, which crowds the breathing organs so as to rupture the small cells in the lungs, and as a result the horse cannot expell the air naturally but must "heave" in the effort to do so. The mistake is wrong feeding in the first place, so that digestion is upset and the whole digestive system weakened. The horse shows a harsh, staring coat, and the whole appearance is dejected. The nervous system is likewise affected.

Conkey's Heave Remedy will cure every symptom of Heaves and Broken Wind, even in the worst cases, provided the directions are followed carefully. The medicine should be given regularly as directed, and a few simple rules for feeding followed out absolutely. For unless the cause of the disease is remedied, plainly the same symptoms will be repeated. A purgative should be given occasionally and the system kept open. Or, a better way is to give the horse occasional treatment with Conkey's Stock Tonic.

All horses with any tendency to heaves should be put on Stock Tonic treatment, to correct digestion and tone the vital organs.

Conkey's Heave Remedy acts directly on the weakened digestive organs, tones them up and strengthens them to do their work. It improves the coat and the horse soon shows general improved condition, with no sign of heaves.

Price—\$1.00.

Conkey's Colic Remedy for Horses

Colic in horses is a source of much loss. Colic comes suddenly. Relief must be quick. The horse will die if the medicine takes too long to act or if the right remedy is not at hand and you must send away for it. It is no wonder that more horses die from colic than from any other cause.

Conkey's Colic Remedy for Horses is lightning relief from this sudden and dangerous ailment. It will cure an ordinary case in a few moments. Not only the medicine itself is right, and quick in its action, but the manner of giving it is an enormous advantage. Most colic treatments call for a drench. A drench is dangerous to give a horse that is frantic with pain, often it is impossible to drench a horse, for instance when out on the road and the attack comes on. Conkey's Colic Remedy is easy and

convenient to give—a few drops on the back of the tongue of the suffering animal and relief comes immediately.

Every owner or user of horses should know about this Conkey Remedy for Colic and should have it on hand for emergency use. It may save the life of a valuable animal. If colic is treated instantly with Conkey's Colic Remedy as directed, there is practically no danger, but if the attack is neglected or this Remedy not at hand to give immediately, the delay very often proves fatal.

Some horses are especially liable to colic attacks, but often the trouble is due to wrong methods of watering or feeding, or to worms in the intestines. Gas colic is the common form of the disease, but spasmodic colic, or gripes, is frequent also, as the result of overfeeding or watering a horse when warm. Sometimes inflammation of the bowels is mistaken for colic. The general symptoms are very like gas or flatulent colic but such a mistake is serious, for in inflammation of the bowels (enteritis) the treatment should be exactly opposite to colic. You will never make this mistake, however, if you note this difference, that colic comes suddenly; but enteritis is gradual and the severe pain is constant.

If you are a horse owner you need Conkey's Colic Remedy. You run a serious risk in not having it on hand for emergency. Remember it is easy and convenient to give, not a drench, and that it brings relief quickly. Get it, and have it on hand.

Prices—50c and \$1.00.

Conkey's Distemper and Cough Remedy

Here is another remedy that should be on hand for emergency use, especially in fall and winter when weather is unsettled. Horses are liable to chill at such times, since they are shedding. The atmospheric conditions favor such disorders, as influenza, epizootic, strangles or distemper and pink-eye (cellulitis). Watch for the first signs of cough, cold or fever. There is little danger in these attacks except when the symptoms are neglected, so that complications result, or the condition lingers and becomes chronic.

There is no excuse for neglect. Conkey's Distemper and Cough Remedy is given in small doses and is easy and convenient treatment. It is not a drench or a ball, hence there is no danger in giving the Conkey treatment even when the horse's throat is inflamed or otherwise in irritated condition.

For so-called "shipping fever" Conkey's Distemper and Cough Remedy is the best treatment known. Guaranteed also for all cases of cough, cold, chills and fever, influenza, epizootic, strangles (distemper), pinkeye (cellulitis), and for pneumonia and bronchitis. Directions for general care and feeding are included with this treatment; for in all diseases of above nature good nursing is an important matter.

The important thing is actually to have Conkey's Distemper and Cough Remedy on hand for use when wanted. Meet any symptom of cough, cold, chills, etc., with the treatment promptly. Every package sold under regular guarantee. Money refunded on your plain request to do so, if in any case you are not satisfied with results.

This is our general all around guarantee. You take no risk on any Conkey package.

Price—\$1.00, postpaid.

Conkey's Fistula and Poll Evil Remedy

For Poll Evil, Fistulous Withers, or malignant or stubborn abscesses and sores on any part of the body. The poll, or top of the head, and the withers, on account of their prominence, are especially liable to injury, from accidental blows or pressure of any sort. A bruise at either of these points is apt to develop an abscess or tube-like wound. These tubes or pipes tend to deepen and burrow. The pus cavity cannot find natural drainage and the decomposing and diseased matter collects, the cavity meanwhile sinking deeper and deeper. The longer neglected the deeper the fistula works, getting down into the tissue and even affecting the bone. The danger is increased the deeper the fistula goes. Usually the swelling at the top breaks and discharges foul matter.

Make no mistake in treating a case of abscess, fistula or poll evil. Get Conkey's Fistula and Poll Evil Remedy, the humane yet thoroughly scientific treatment. Follow directions for the combination, alternating treatment, and you will be sure the wound heals safely and scientifically from the inside out, with no cruelty to the animal.

Conkey's Fistula and Poll Evil Remedy is sold under the usual Conkey guarantee. This remedy must absolutely satisfy you with results or you get your money back.

Price—\$2.00, or \$2.25 prepaid.

Conkey's Eye Remedy

Weak eyes should always be treated with Conkey's Eye Remedy. If neglected serious trouble, or even blindness, may result. Look out for such symptoms as watering eyes, swelling of the lids, changing color, and difficulty in seeing. Conkey's Eye Remedy is a soothing, cooling application, very grateful to the animal when the eyes are inflamed.

Badly lighted and badly ventilated stables tend to cause eye weakness. The stable should be well lighted, but the light should never come direct in the animal's face. Overhead feed racks are another cause of trouble, on account of dust and chaff. Fumes from piles of filth will injure the eyes.

Conkey's Eye Remedy is easy, simple, effective treatment for any eye trouble that can be cured short of a surgical operation. Used with a camels hair brush, with a medicine dropper, or simply swabbed on with a piece of sterile cotton. It should always be on hand on the Remedy Shelf, ready for emergency. Sold on agreement, your money back if it does not positively satisfy.

Price—50c.

Conkey's Gall Salve

A salve is handy to use. This preparation is highly antiseptic and is effective treatment for galls, chafes, sores, cuts, scratches, etc. A pleasant cooling application for any irritated surface. An all-around, good, healing salve, useful for many purposes. No danger of mercurial poisoning from the use of this excellent and safe ointment.

Prices—25c and 50c.

Conkey's Healing Powder

Here is another necessity for the Stockman's Remedy Shelf. Probably no article has more general usefulness than this wonderful Healing Powder. It heals rapidly and completely galls, cuts, wounds, chafes, sore back, indolent and malignant ulcers, scratches, thrush and sore and tender mouths. It is an astringent, an antiseptic, a germicide, all in one. Any sore or chafed spot is an invitation to trouble. You know this, so never neglect a cut or wound or any sore place, but dust immediately with Conkey's Healing Powder and get it healed quickly, before any germs enter in or flies are attracted and a festering, or wormy sore results. Simply dust on Conkey's Healing Powder from the sifter-top can. This makes a dry dressing, easy to apply, and protects any exposed surface from further irritation or rubbing. The dry powder absorbs perspiration, kills any germs and prevents infection, as well as makes a smooth, chafe-proof surface under the harness.

It is just as necessary to dust your horse with Conkey's Healing Powder as to oil your mower; and for the same reason—to make "easy running," prevent undue friction and unnecessary wear of parts. Your horse is a flesh and blood machine. Horse-power depends in large part on the horse's comfort when he settles into the collar. If the collar is poorly fitting you get less horsepower, as well as galls, chafes and sore shoulders. Keep the collar free from hardened ridges of dirt and sweat. Wherever there is any danger from rubbing or chafing, dust on Conkey's Healing Powder. Keep your faithful animal chafe-free.

Conkey's Healing Powder is very quick in results. Cures bad cuts and wounds in remarkably short time, so that you do not lose the service of your animal. It is the most scientific preparation for use after surgical operations, such as castrating and dehorning. Needed in many emergencies as well as for dozens of common uses. Keep Conkey's Healing Powder on hand. Let it have a regular place on your Remedy Shelf.

Prices—25c, also 50c, postpaid.

Conkey's Warming Liniment

A first-rate liniment certainly is a necessity to every farmer and stockman. There are dozens of common uses and many emergencies where a stimulating, penetrating liniment is wanted and wanted immediately.

Every pharmacist knows there are problems in compounding, rendering and combining. It is not enough to simply mix things up. We have spared no effort in perfecting Conkey's Warming Liniment and today feel doubtful if any alteration could be made in its present manufacture that would improve its usefulness in any degree.

Removes soreness, lameness, swelling, stiffness. Strengthens muscles; excellent for swoony or partial paralysis, rheumatism, strains, sprains. Increases circulation in a part, relieves congestion or inflammation. Excellent for treatment of sore throat or lungs or cold in chest. A warming application for any part. Penetrating, stimulating, eases pain.

Equally safe and reliable for human use. Contains no poison.

Price—50c.

Conkey's Pain Lotion

Here is another emergency article that should be on your Remedy Shelf. For sudden sprain or lameness; for inflammation of any part, in all accidents, for soreness, pain, cuts, wounds, dress the part immediately with Conkey's Pain Lotion, and the patient will feel grateful.

Note that this preparation is not a liniment, not an irritant. Its action is soothing, not stimulating. It is cooling, quieting, healing. It reduces pain, takes out inflammation, soothes, heals. In addition to all this it is highly antiseptic, making a perfect and all-sufficient dressing for any painful part. It also has special mentholic properties. That is why Conkey's Pain Lotion is just the treatment for inflammation or soreness of the throat or mouth. Used as an inhalant it instantly clears the head passages. Apply with a spray or atomizer, or simply swab the Pain Lotion directly on the part.

Conkey's Pain Lotion is an excellent bag ointment for cows. It soothes the inflammation, reduces congestion, heals sores and eruptions.

Price—50c

Conkey's Hoof Remedy

A good hoof means a good horse. Under natural conditions, contact with soft, moist earth keeps the hoof substance in elastic condition just as Nature intended.

But when we start to work the horse on city paving, or hard dry roads or let him stand in the stable a day or two, the hoof dries out. In this hard dry condition it is easily cracked or split. The horse cannot do his work unless his feet keep elastic and pliable as nature made them. This elasticity is very necessary to lessen the jar of the footfall. Hard, dry feet cause many foot troubles, such as split hoof, quarter-crack, seedy toe and consequent loss of usefulness to the owner as well as needless pain to the horse.

You can keep the hoofs in good shape, no matter what the condition of the road by daily use of this Hoof Remedy. Don't make the mistake of smearing axle grease or linseed oil on the hoof. Grease drives out moisture. Conkey's Hoof Remedy has a lanolin (wool-fat) base, which penetrates the horn substance, but does not clog the tissues, as would grease or ointment. Used with a brush or rag. Takes but a moment. Keeps the hoof moist. Makes the feet healthy and elastic. Prevents Contracted Feet and saves the expense of bar shoes, and pads under shoes. Prevents Split Hoof, Bog Spavin, Quarter Crack and Seedy Toe. Saves all that cost for fancy shoeing because it keeps the feet in good condition and counteracts the effect of road and weather. Mixed with bran, it makes an excellent hoof packing, or can be used for an antiseptic poultice for any part. It will cure a bad case of thrush and put the feet in nice shape. Should be used regularly in every stable. It prolongs the usefulness and increases the value of your horse.

Prices—1 pint, 50c; 1 quart, 75c; 2 quarts, \$1.25; 1 gallon, \$2.00. Write for prices on larger quantities.

Conkey's Absorbent

This is the great remedy for lameness from Spavin, Ringbone, or other bony deposit. Also for Curb, Splint, Capped Hock, Swollen Joints, swollen tissue, filled tendons, synovitis, bursitis, or any inflammatory thickenings near joints.

These serious troubles are caused by strain or accident and strains or accidents are usually due to some fault of action. Faulty action nine times in ten, comes from neglect of the hoof, as a result of which the whole body is thrown out of joint. Elsewhere we have explained the value of regular dressing of the hoofs with Conkey's Hoof Remedy. It is clear that if this simple treatment is adopted as a regular habit in the stable, you save the risk of serious injuries to your horse's legs. Most of the injuries of the class above described are exceedingly painful to the horse and interfere with his usefulness. Spavins of various kinds, whether painful or painless, constitute unsoundness. Ringbone, splint, sidebone (which is practically a restricted ringbone) all lessen a horse's usefulness and may utterly ruin his value. The longer these conditions are neglected the worse they become; and all the time the horse is more liable to other strains and accidents. In fact, these serious troubles usually have very slight beginnings. Often if the first strain or swelling or slight lameness is promptly treated, and the fault of the hoof corrected so as to restore proper action, the trouble is cured quickly and permanently. For just such attention Conkey's Pain Lotion should be on hand. A little of it promptly used saves dollars of future treatment.

For any persistent lameness, or any swelling, thickening, or bone enlargement treat at once with Conkey's Absorbent.

Conkey's Absorbent will not in every case entirely remove the bony enlargement. It will reduce the enlargement, and in all but very old and obstinate cases it will actually remove the growth, by absorption and dispersion. But you can take the package on this guarantee. No matter how old or how bad the case, or how long neglected, if Conkey's Absorbent treatment according to directions does not remedy the trouble to your entire satisfaction you can get your money back in full, from the dealer or direct from The Conkey Company.

Conkey's Absorbent is easy to apply. More important than this, it is easy treatment on the animal. It does not blister, or leave any tell-tale blemish. Its action is the mildest known for growths and lameness from Spavin, Curb, Splint, Ringbone, Sidebone, etc. Why subject your horse to cruel firing and blistering when Conkey's Absorbent treatment remedies the trouble without pain or ugly scars?

Conkey's Absorbent is also useful to have on hand for removing puffs and bunches, leaving the part smooth and perfect to the touch and sight. Get Conkey's Absorbent and it will improve the appearance of your stock, which will increase their market value.

Have it always on hand for emergency and treat every lameness, bunch or enlargement soon as it appears. Don't try to get along without Conkey's Absorbent. Don't try to save the price of the package, and risk the value of your horse.

Price—\$1.00.

Conkey's Bag Ointment

A remarkably efficient bag ointment, which soothes and softens. Cooling, penetrating. Excellent for treating any sore or inflamed condition, such as Garget or Caked Udder, Bunches in Bag, Sore, Cracked or Injured Teats. Conkey's Bag Ointment allays inflammation, reduces congestion, heals sores and eruptions. It is also a perfect antiseptic dressing for any part.

Prices—25c and 50c.

Useful Cattle Instruments*

Teat Dilator—In case of leaky teat use dilator till the wound or leak can be cured. Price, \$1.00 postpaid.

Bistoury—For slitting teats of a hard milker, to enlarge the canal. Price, \$1.50 postpaid.

Teat Expander—Made of metal, nickle-plated; to be used with or without the bistoury. Price, 50c.

Milking Tubes—For sore and obstructed teats, or for hard milking cows, these tubes are a real necessity. Made in three sizes, and any size can be had either plated or in solid coin silver, as follows: 2-inch size, 25c; solid silver, 40c; 3-inch size, 30c; solid silver, 50c; 4-inch size, 35c; solid silver, 60c.

Hard Milker Outfit—Includes Teat Bistoury; Teat Opener; Milking Tube; Teat Expander; 1 cake Animal Soap. Packed in handy wooden case. Price, \$3.00 postpaid.

Trocar and Canula—For treating bloat or hoven. Plunge instrument into the body at height of swelling over the rumen (midway between ribs and hip, a hand breadth from the backbone). Remove trocar but leave canula or tube in position until all gas has escaped. Full directions with instrument. Price, \$1.50 postpaid.

Milk Fever Outfits—With this outfit on hand no dairyman need fear fatal results from Parturient Apoplexy, commonly called Milk Fever. Price of outfit complete, with full directions, \$3.00, prepaid.

Fever Thermometer—Every stock owner should have a good clinical thermometer, which can be inserted up the rectum or in the vulvar, and held in place for two or three minutes. These temperature tests are often the best means of diagnosing the trouble. Page 12, we have given some general rules for understanding temperature readings, also a table for normal temperatures. In addition to these there are other useful rules with which the stockman can easily acquaint himself and thus have a pretty solid basis for favorable or unfavorable prognosis of any given case. The thermometer listed here is considered the best on the market. It is fully reliable. Price, \$2.00.

Tuberculin Test Outfit—Full directions included, also tuberculin sufficient to test ten cows. Price, complete, \$5.00. Tuberculin alone (in vial, sufficient for ten cows) price, \$1.50 per vial.

*We do not make Cattle Instruments, but handle this reliable line for convenience of our patrons.

Conkey's Fly Knocker

This is a specialty for the fly season. It is a necessity to every dairyman as it keeps flies off and enables the cows to turn all their energy into milk or butterfat.

Cows can't fight flies and make money for you. They fret off more than their feed can produce in energy, flesh or milk. It is common sense and business economy to spray them with Conkey's Fly Knocker so that they can do their best. No use to lose out on your milk contracts and let your cows fall off in milk just because the flies have arrived. Conkey's Fly Knocker more than pays for itself every time. In addition to saving milk, it saves trouble and annoyance in handling the herd, saves the milker's time, and saves torment to the dumb beasts. Positively is not poisonous. The odor will not taint the milk. Good lasting qualities when used according to directions. Protects cattle from gad flies, buffalo flies, screw worms or any blow fly. Prevents lice and grub. Easy to use with cloth or sprayer.

Horses should not be allowed to fret and spoil in spirit because of tormenting flies. Conkey's Fly Knocker will not injure the horse's coat but will keep the torturing flies away. Saves feet, saves flesh, saves spirit. Saves shoes from being stamped off. Sprayed on your horse before taking him for a drive, it prevents the danger from accident or running away. Blacksmiths cannot afford to do without Fly Knocker because it saves time in shoeing, saves trouble and expense of a shoo-fly boy, and prevents danger of accident.

Dealers say "Best fly dope we ever handled." Customers say "Nothing else will do what Conkey's Fly Knocker does." We say, let every man try it on our guarantee money back if he wants it. Let every dairyman, horseman, blacksmith, judge Conkey's Fly Knocker for himself.

Prices—1 qt., 35c; 2 qt., 60c; 1 gal., \$1.00; 5 gal., (jacketed) \$4.00. Expressage extra. Western and Canada prices: qt., 50c; 2 qt., 75c; 1 gal., \$1.25; 5 gal., \$5.00. Express extra.

Sprayers: Our own brand, the Conkey Perfect Sprayer. Price, 50c.

Best and most economical way to use Fly Knocker is with the sprayer.

Dairy cows can be pushed hard for production when you use Conkey's Stock Tonic. See page 207.

Conkey's Nox-i-cide

If there is any one thing which absolutely you must have, it is a good all-around dip and disinfectant.

For perfect usefulness, such an article should be a combination

**Dip,
Disinfectant,
Spray,
Lice Killer.**

Most diseases are preventable, even those for which there is no cure. The worst diseases the stock owner has to contend with are the contagious germ diseases, of which there are many. These diseases break out suddenly, and rapidly spread through the herd, sweeping away the stock-owner's profits, killing outright or leaving the animals weakened, sometimes permanently injured. Now if you have the right sort of dip and disinfectant, it will kill the germs of disease. But an all around dip and disinfectant must do more than kill germs. As explained in the text of this book, page 8, to meet all practical purposes a good disinfectant must be an antiseptic, a germicide, a parasiticide and an insecticide all in one. It must be non-explosive, non-corrosive, non-poisonous. In other words, it must be safe. It must also be easy and pleasant to use, or the average person will put off using it—often too late.

This is the scientific test of a good dip and disinfectant. But there is a practical test: It must be cheap. It must be cheap so that you can use it often and use a lot. Take a pencil and figure out how cheap Conkey's Nox-i-cide is. Every gallon mixes with water, 1 to 100 parts. You can even afford to waste a little, rather than skimp on using enough. Keeps everything clean. Keeps the quarters sanitary. Insures your investment against loss from contagious disease. Rids the flock of parasites of every sort. Conkey's Nox-i-cide is not a cure-all, but it wipes out all danger from a long list of diseases, simply by preventing the first start.

Besides this, a good many disorders will cure themselves if you keep conditions germ-free. Cuts, wounds, scratches can be quickly healed by disinfectant. Cure all such places in the first place, and they will not develop into festering or wormy sores. There is another large class of disorders for which Conkey's Nox-i-cide is the remedy. Parasites are the serious menace to livestock. Parasites, both internal and external, are the one biggest cause of unprofitable stock. Ticks, lice, fleas, mites, grub, parasites of many sorts attack the hide or seek entrance in body-openings, such as mouth, nose, vulva, and serious trouble results. Conkey's Nox-i-cide is sure and positive riddance of all such pests.

Sheep and swine are especially troubled with internal parasites. This disinfectant is not only safe for external use, but a little of it in the slop for hogs, or snuffed up the nose when the sheep is dipped, is very beneficial, as it helps to get rid of these internal parasites.

Dipping is a necessity if you would keep your flock in health. All animals thrive better when the skin is clean. Conkey's Nox-i-cide not

only makes a healthy skin, it makes better texture of hair or wool. Some dips burn, stain or kink the wool, take the life out of it, and lower its market value. Such dips ruin the strength of fibre and spoil it for dyeing. Conkey's Nox-i-cide has none of these faults. The wool-factor pays a higher price for the shearing from Conkey-dipped sheep.

Some dips kill scabmites on sheep, but not ticks and lice. Conkey's Nox-i-cide kills all these parasites. Some dips cause loss of little lambs from nursing their dams after dipping. This dip does not even nauseate them. Animals are easily poisoned by absorption through the skin. Many cases of mercurial poisoning are on record, simply from the application of mercurial ointments. Conkey's Nox-i-cide is positively non-poisonous.

Conkey's Nox-i-cide is a real necessity. It pays for itself. It kills lice, ticks, mites, even the minute organisms that cause mange, itch, ringworm and eczema. For all purposes of dipping and disinfecting and for external dressing of any part, there is nothing like Conkey's Nox-i-cide. It heals sores, cuts, galls, and prevents infection. It will cure thrush, grease-heel and scratches when used as directed. It will also stamp out contagious abortion if used as directed, page 141, when this trouble enters a flock or herd.

Germes of many diseases keep alive for months unless the quarters are thoroughly cleaned and sprayed or washed with a solution of Conkey's Nox-i-cide. It should be sprinkled in runs and yards to sweeten the ground. It should be used in the wash water to keep utensils germ-free as well as what we call clean. It should be used often, it should be used with regularity. It is even economy to waste a little rather than run the risk of losing a lot of your due profit on account of preventable disease.

Remember that Conkey's Nox-i-cide is cheap. Every gallon makes 100 gallons of ready-to-use disinfectant. It is pleasant to use, no danger of explosion or corrosion or poison to the user or to the stock. You need it. It is a necessity on every Remedy Shelf.

The price is right. \$1.25 gallon. 75c half gallon. 50c quart. Express extra. Western and Canada prices: \$1.50 gallon. 90c half gallon. 60c quart. Express extra.

USE CONKEY'S PERFECT SPRAYER

**For spraying any Liquid Disinfectant
or Insecticide. It saves waste.**

The best that can be sold for the price

There is as much difference in sprayers as in cows. You can't go by looks, you must go by test. This sprayer is made of good tin and has good serviceable leather washer. It is made well and does good work. It stands the test. You can buy a cheaper article, but not nearly so good at near the price. Positively the best spray pump manufactured that can be sold for the price.

Sprays up or down.

Price, 50 Cents : By Mail, 75 Cents

Conkey's Poultry Remedies

We believe in treating each distinct disease with a definite, specific remedy.

Another great secret of curing disease is to apply the remedy in the earlier stages. We have put up our remedies in such convenient form that they can be given at once and with the least inconvenience. They are reasonable in price, so that any poultryman can afford to keep them on hand, ready for use at the logical moment without waiting to send for them. Money back if any remedy *ever* fails you.

Free Advice on Any Poultry Problems

If you have not had a copy of Conkey's 50c Poultry Book, 80 p., write for it.

Full of good working ideas. Mailed FREE on receipt of 4c postage.

Information furnished cheerfully. Advice on any poultry difficulties FREE.

Conkey's Roup Remedy is used in every civilized country of the world and is absolutely guaranteed for this most terrible poultry disease, if given in anything like a reasonable time. Use it as a preventive also. Prices, 50c and \$1.00 postpaid.

Conkey's Bronchitis Remedy—Bronchitis is often mistaken for Roup, though it is a distinct disease and requires different treatment. This remedy does away with lime fumes and other hurtful treatments. It is meeting with great favor and is sold on satisfaction guarantee. Price, 50c postpaid.

Conkey's Cholera Remedy—All diseases of the digestive organs are commonly called "Cholera." Actual Asiatic Cholera, which is seldom seen in this country, is incurable. This remedy will cure all cases of so-called Cholera, such as Indigestion, Bowel Trouble, Diarrhoea, Dysentery, etc. Price, 25c and 50c, postpaid.

Conkey's Gape Remedy—Gapes are caused by gape worms in the windpipe. This remedy saves thousands of little chicks each season. It will save yours if given in reasonable time. Price 50c; 65c postpaid.

Conkey's Chicken Pox Remedy—Chicken Pox is a disgusting disease. It goes by different names in different localities. In the south it is called Sore Head. In other places, it is termed Pian, Warts and Pigeon Pox. It is the smallpox of the poultry yard. This remedy will wipe it out every time. Price, 50c; 60c postpaid.

Conkey's Limber Neck Remedy—Limber Neck is caused by the fowls eating some sort of decayed animal flesh which is full of ptomaines. It is really a ptomaine poisoning. A dead rat under the barn may cause it. It is a very fatal disease if not attended to at the start. This remedy cures it, if given in prompt and reasonable time. It is one of the remedies, which should be right at hand. When you need it, often it is too late to send for it. Price, 50c; 60c postpaid.

Conkey's White Diarrhea Remedy—The new Conkey discovery, a remedy also a preventive for fatal white diarrhea in little chicks. Easy to give in the drinking water. Cures even bad cases. Have it on hand early to insure the hatch. It is chick insurance. Price, 50c postpaid.

Conkey's Black Head Remedy—A special remedy for Blackhead (Enterohepatitis) in turkeys. Guaranteed results. Price, 50c postpaid.

Conkey's Poultry Worm Remedy—Rids the fowl of all the hurtful worms as well as the so-called harmless worms. Leaves the fowl in a healthy, vigorous state, with no drain on its system. Price, 50c postpaid.

Conkey's Poultry Laxative—Takes the place of Castor Oil, Epsom Salts, Aloes, etc., so often recommended by some, and denounced by others. All doubts are removed by using this remedy. Has no harmful effect on the fowl, is a laxative, or a purgative, according to the dose, and can be depended upon every time. Price, 25c postpaid.

Conkey's Poultry Tonic—For birds run down, off feed, and out of condition, is a valuable health restorer. Price, 25c; 30c postpaid. This is a general tonic, distinct from our special Laying Tonic.

Conkey's Rheumatic Remedy—Rheumatism in fowls is similar to rheumatism in human beings. This remedy cures the lameness and restores your fowls to usefulness and profit. Price, 50c; 60c postpaid.

Conkey's Scaly Leg Remedy—Scaly Leg is caused by a parasite working underneath the scales of feet and legs. It spoils a fowl and gives it a very bad appearance. This remedy kills the parasite and removes the blemishes. It is also much used to dress the legs of show birds for exhibition. Price, 50c; 60c postpaid.

Conkey's Laying Tonic—This article actually promotes egg production, without injuring or straining the fowl in the least. It is not a food, which you can buy cheaper at home, but it is a tonic medicine which induces the perfect assimilation of the food, increases the appetite, keeps the egg producing organs in a vigorous state, promotes egg production and gives the necessary health to accomplish it. It is not a stimulant, but a natural tonic which keeps the vigor of the fowl normal, under the strain of heavy egg laying. Prices, 1½ lbs., 25c; 3¼ lbs., 50c; 7 lbs., \$1.00; 25 lb. pail, \$3.00. Expressage extra.

Conkey's Healing Salve—This article is one of the best salves known and is as good for you as for your fowls. It heals everything on man, beast, or fowl. Price, 25c and 50c, postpaid.

Conkey's Flea Salve—For the southern Stick-tight or Hen Flea. This kills and removes them at once without injury to the fowls and is proving of great value in exterminating this pest. Price, 25c or 30c postpaid.

Conkey's Lice Powder—This is a new powder, discovered since January, 1907. It is perfectly harmless to the fowl and kills the lice dead on the spot. They do not drop off, crawl away and revive, to bother you again, but they are wiped out entirely. Prices, 5 oz. Pkg. 10c;

15 oz. Pkg. 25c; 48 oz. Pkg. 50c; 100 oz. Pkg. \$1.00. Add 1c per oz. for postage, or expressage extra.

Conkey's Lice Liquid—The only thing for Mites. It kills them in the cracks, crevices and holes of poultry house, roosts and hiding places. It keeps your fowls free of one of their greatest pests. Prices, 1 Quart, 35c; 2 Quarts, 60c; 1 Gallon, \$1.00; 5 Gallons (jacketed), \$4.00. Expressage extra.

Conkey's Head Lice Ointment—This article will destroy the head louse, which annually kills thousands of little chicks. It has an agreeable odor, is perfectly harmless to the chick, and kills the head louse the moment it touches him. It is a very valuable ointment. Prices, 1 oz. Box (good for 100 applications), 10c postpaid, 3 oz. Box (good for 300 applications) 25c, postpaid.

Conkey's Sulphur Candles—Four ounces of sulphur in each candle, and supplied with a protecting tin basin in which to burn it. Easy to light, safe to use, and deadly to all germ and insect life. Moisten the air, burn the candles and they will neutralize all germ infection. Packed neatly, one dozen in a box, or will sell them singly. Prices, each 10c, three for 25c, \$1.00 per doz. By mail, 5c extra each.

All of Conkey's Remedies are guaranteed to satisfy the user or his money will be returned without a question.

Full description of these and all other known diseases of poultry in the famous Conkey Poultry Book, 50c; 80 pages. This book is a complete manual of practical information on housing, management, feed and general care. Sent free for 4c postage and name of any dealer.

Conkey's Dog Remedies

WE make a limited line of Dog Remedies; but this includes the most frequently needed preparations, and every article put out can be relied on for the work it is claimed to do.

Conkey's Distemper Remedy for Dogs—A boon to dog lovers. Has given entire satisfaction even in extreme cases. Price, 50c; 60c postpaid.

Conkey's Dog Tonic—For dogs run down, off feed or poorly fed, in fact, debilitated from any cause or recovering from disease. Brings them quickly to condition. Price, 50c; 65c prepaid.

Conkey's Mange Remedy for Dogs, Cats and other animals subject to this loathsome disease. This remedy is an absolute cure if directions are followed closely. An excellent blood purifier. Price 50c, or 65c prepaid.

Conkey's Worm Drops for Dogs—Remove worms without injury to grown dogs or young puppies, even the finest bred dogs. A dependable remedy for this common ailment. Price, 50c, or 65c prepaid.

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A HANDY BOOK *of* REFER-
ENCE *on* POULTRY RAISING

25th Edition

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THE G. E. CONKEY COMPANY

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seems to be no limit in sight—all that we know is that poultry raising is now one of the most profitable industries and that it is rapidly advancing. Capital is finding its way to investment in poultry raising, and into the manufacture of correct appliances for its further advancement. Poultry culture has the confidence of the general public and, while many will always fail from lack of application and proper regard for necessary conditions, these failures will be in no greater proportion than may be found in any industry that tempts the unworthy and the unfit by its promise of unusual profits. The course of any line of human endeavor is marked by the wrecks of those who fail, and who would fail in any venture where study and application are required. To the man who is willing to give it his earnest attention, his zeal and application, it offers the inducement of a healthy and pleasant occupation and the very best chance for money making.

WHERE TO START

In selecting a site for a poultry plant, you are not obliged to choose high priced land. If you can select well drained, well watered, gravelly soil, it would be desirable. If this land is somewhat wooded so much the better, as shade is a valuable factor in poultry raising, and must be supplied if there is no natural shade. If you can choose a plot where the ground slopes to the south, or southeast, it will provide the sun radiation so necessary for natural warmth and sanitation. Avoid a clay soil.

In laying out your plan for a house, see that it fronts a little east of direct south. The direct south would be right were it to be continual summer, but, when winter comes, you will need all the sun radiation you can find, and the slight turn to the east will provide it when it will do the most good. This position will shelter the front of the building from the west and northwest winds. If you have some good meadow land it will be of great value, for thereon you can grow clover, or it will produce corn and other cereals. It has been found that clover can be made the base of profitable feeding, and a poultry farm so situated that it may produce an abundance of green food is well selected.

Before you start to build, consider carefully the question of drainage. The surface water should run from the house—not towards it—and you must be careful that moisture cannot collect underneath the house to seep up through the floor. If water can collect under the house, you cannot well dry it, even with ventilation beneath. Cess pools under the house will endanger the health of fowls.

BUILDINGS

Various locations may require different kinds of buildings, and conditions of climate should be properly considered. It is impossible for us to state which exact variety of house is the best for you, without knowing just how you are located and all the points which enter into the subject. A house should be selected with due regard to its natural conditions, and all that we can do is to give you valuable ideas about the housing of fowls, and the various kinds of buildings, and let you select to suit your needs.

The poultry house does not need to be in any way fancy, either in fittings or design, but there are a few certain rules which cannot be overlooked if you are to expect success.

VENTILATION—The fowl uses up more oxygen from the air than any other breathing creature according to size. It has not sweat glands, never sweats, and gives off all moisture by the breath.

Now let us see if we cannot meet the requirements of nature in a house for our fowls. They must have plenty of pure, fresh air in order for them to obtain their natural, and necessary amount of oxygen. We can understand that moisture coming from the breath, directly into the cooler air, without having a chance to slowly evaporate as it would in coming through a coat of hair or feathers, will condense very quickly. This is why it is so necessary to have perfect ventilation to carry off this

moisture or the house will become damp and, in cold weather, a hoar frost will form on the inside walls.

DAMPNESS must be avoided to keep the fowls healthy. The warmer the air in a house the more moisture it will hold and, when this comes in contact with a cooler surface it condenses in the form of hoar frost in winter, and makes the air soggy and damp in summer, and it is common to say that the house sweats. The remedies for these conditions are, first be sure that you have a dry floor, and the second is diffusive ventilation to dry out the moisture in the air as fast as it appears.

DRAINAGE—If circumstances compel you to build on ground that is not naturally dry, you should make it so by building up your ground as shown in illustration No. 1. Carry your foundation walls up to a height of eighteen inches, or more, if necessary, above the level of the ground, and fill in a foot of this with small stones, coarse gravel and cinders, and the remaining six inches with sand or dry, sandy loam. Then slope up on the outside to the bottom of the sills, as shown in illustration, and you will turn away the surface water and keep your floor dry if the ground is not entirely too wet about it.

SUNLIGHT—The next important thing to consider is sunlight. It not only makes the house cheerful, but it provides a natural sanitation which tends to prevent disease, aids

Illustration No. 1.

Illustration No. 2.

in curing it, and gives fowls light to see grain scattered in litter. Have just the right amount of glass surface, as too much glass makes a house too warm in the day time and too cold at night. Glass is a ready conductor of heat and lets warmth out as quickly as it will admit it. Glass construction is also expensive. Do not allow more than one square foot of glass surface to twelve square feet of floor space and see that the windows are correctly placed. Set the windows high and up and down, not sideways and low. When they are high the sunlight passes over nearly the whole floor every day, drying and purifying the whole interior.

If you will look at illustration No. 2 you will see that the sun is at its lowest point from the middle of September to the middle of March, and that is the time when it is the most beneficial as it covers the coldest time of the year. Notice the lines showing the extreme distance that the sun would reach with the tops of the windows at $4\frac{1}{2}$, $6\frac{1}{2}$ and 8 feet from the ground. With the top of the window at $4\frac{1}{2}$ feet, the sunlight would never reach further back than 10 feet $1\frac{1}{2}$ inches. At $6\frac{1}{2}$ feet, it would reach $14\frac{1}{2}$ feet, while at 8 feet, it would strike the back wall of a sixteen foot house, $\frac{3}{4}$ foot above the floor. If lights of glass in window are too small, the sash seriously obstructs the light, while if lights are too large the glass will prove expensive on account of breakage. The proper medium between the two extremes is a size of 8 by 10 inches in a 12-light sash, using two of these windows for a house of 10x12 feet. Single sash is cheaper and also handier, as it can be hinged and hooked to the ceiling, or slid sideways when opened, instead of being raised and lowered as with ordinary sash.

BUILDING THE HOUSE

In planning your poultry houses, it is advisable to consider their location with reference to the economy of time and labor involved in attending to the flocks. It would, of course, be foolish economy to save steps at the expense of thorough care of the fowls, but many plans involve useless time and labor and, in the course of a year, the loss amounts to a considerable item. Convenience of operating is a wise forethought.

Poultry houses may be briefly classed as follows: Continuous houses and colony houses, and either of these may be made in three styles—open, closed, and curtain front, and may also include all the intermediate styles that may come under these classifications, to meet the various ideas of different people and to meet different conditions, but the above classification is correct for all practical purposes and they will all come under these several heads.

Illustration No. 3.
The old style long poultry house.

THE CONTINUOUS HOUSE—The continuous house means several houses under one roof, with partition walls, the wall of one house forming the wall of the next. The advantages of this style are cheap building,

and saving time and labor in caring for the fowls. Its disadvantages are in the difficulty of keeping free from vermin and the danger of contagion in case of sickness. Many poultrymen claim that the advantages and drawbacks balance each other and that the extra care involved equals the labor of the colony house plan.

Illustration No. 4.

The old-fashioned colony house.

at distances to suit the poultryman, according to the amount of traveling he cares to put into the labor of attending the flocks. If open range is allowed advantage is taken of the instinct of the fowl to return to its own home to roost. The colony house gives a better chance for protection against disease though it involves extra labor on account of the distances at which the houses are separated.

THE CLOSED HOUSE—The closed house represents the older method of housing the poultry. It has many advocates today and, whatever the internal improvements may be, the ventilation must always depend upon opening and closing of doors and windows after the manner of years gone by.

THE OPEN FRONT HOUSE is a popular modern idea and its advocates claim much for it. The house is made with unusual depth and with perfectly tight walls, except at the front, which is low and entirely open, without curtains or windows. While this allows absolute ventilation, it avoids drafts on the same principle that it is difficult to blow into a bottle that is tight at every point except the opening. The sloping front and back allow the birds to roost well up in the peak, where the heat from their bodies keeps them warm. This is, perhaps, an extreme, and you will find it modified in the Curtain Front House.

THE CURTAIN FRONT HOUSE—The curtain-front house is coming into favor every day. It will doubtless be in universal use before a great while, as it solves the problem of ventilation without drafts. It is a rather curious fact that a frame covered with muslin will afford a better protection against cold than a sash of the same size with panes of glass. It has been proved an excellent plan in every case where it has been properly tried. It allows the air to filter through the mesh of the cloth in a way that keeps the air in the house dry and provides sufficient oxygen for the fowls. At the same time it breaks up the currents of air, and prevents drafts by mixing the air thoroughly before it can reach the fowls. It will, however, produce shade where glass will not, and will prevent sua radiation unless you also have glass windows to use in winter days when the sun is shining. Many poultrymen provide for this by having the cloth covered frame so that it can be hinged and hooked to the ceiling, while the sash and glass can be slid from one side to cover the openings when the covered frames are elevated. In southern climates, where the windows can be left open on a winter's day, no sash or glass will be needed and, even as far north as the state of New York, there are many poultrymen who claim that no glass is needed at any time or in any climate.

At the Michigan State Experiment Station, when the thermometer registered twenty degrees below zero, for many days at a time these curtained

windows afforded ample protection and the fowls kept on laying without the least interruption or falling off. On the coldest nights, however, an extra curtain was hung in front of the roosts. It was a most severe test of the value of cloth as against glass, in a very cold climate, and the fact that the fowls were comfortable, had no frost bitten combs, and kept actively laying, proves the great value of the idea.

It may be well to mention right here that where roost curtains are used, the too careful poultryman is apt to use them when they do more harm than good. Never use the roost curtains unless the weather is colder than twenty degrees above zero.

The only warmth needed in a poultry house is that given forth by the fowls' bodies; therefore the higher you build your house the colder it will be. A low house is much easier warmed than a high one. If you will make it as low as you can and still give you room so that you will not bump your head, you will have plenty of air space for as many fowls as you have floor space for, on the rule of five to six square feet of floor per fowl. You will find the continuous house warmer than the colony house, as cold walls radiate heat rapidly.

ROOF—The cheapest form of house to build is the square one, and the nearer it is square the warmer it will be, but there is the valuable factor of sun radiation to be taken into consideration, and we would advise that the depth of the house be not more than fourteen feet and twelve would be better. The sanitary rays of the sun are of much more value than the slight difference in temperature and cost.

The cost of a poultry house is influenced by the shape of its roof. We would advise the single span, shed roof as the easiest to build and the most advantageous. It gives the highest point at the front, or south, and the best shelter at the back. It sheds all water at the back and keeps the front dry and cheery. It also allows the arrangement of the windows to be such as to throw the sunlight back into the house. If it slopes towards the north, a tarred paper, or prepared roofing, will last much longer as it is not exposed to the vertical rays of the sun, and this also makes the house much cooler in summer.

FAULTY CONSTRUCTION—In illustration No. 5 you will notice some examples of faulty construction. No. 1 has the windows too low and set horizontally; it will afford but little sun radiation.

The front of No. 2 is not perpendicular and will always be a source of annoyance. In No. 3 the ridge roof will cause a drip to the front, while the glass surface is too great for the size of the house; it will be too warm in summer and too cold in winter. No. 4 will have no sun radiation, the slope of the roof to the south will make

Illustration No. 5—Don't build like this.

it unbearably warm in summer, and the high north wall will make it cold in winter. There is not a grain of good judgment in any one of these houses and we show them that you may avoid any building not justified by common sense and ordinary philosophy.

FLOOR SPACE—From 5 to 6 square feet of floor space, and from 30 to 36 cubic feet of air space, for each fowl, is about the right basis of

measurement in planning a poultry house. A house 15x12x7 feet high in front, and five feet high at the back, with a single span roof, will have 180 square feet of floor space and 1,080 cubic feet of air space, which allows a flock of thirty fowls ample accommodation.

Look out for dampness, as it is fatal to profits. The warmer the air in the house the more moisture it will hold and, when this comes in contact with a cooler surface it condenses in the form of hoar frost in winter, and makes the air soggy and damp in summer, and it is common to say that the house sweats. The remedies for these conditions are, first be sure that you have a dry floor, and the second is diffusive ventilation to dry out the moisture in the air as fast as it appears.

EXPERIMENT WITH CURTAIN FRONT—Illustration No. 6 shows how an experiment was tried on the Lone Oak Poultry Farm at Reading, Mass., with muslin curtains. They were troubled by moisture condensing on the walls and roof at night, and then dripping on the floor during the day. They made light frames one-fourth the size of each window and covered them with one thickness of ordinary muslin. Where the window

Illustration No. 6.

was dropped one-fourth and the curtain set in, as in Figure No. 1, Illustration No. 6, it resulted in a slight draft. When they used the muslin at top and bottom, as in Figure No. 2, it created considerable draft, but where used in the whole half of the window, as in Figure No. 3, they found that it gave excellent ventilation, without draft, and the condensation of moisture ceased. This, however,

does not present the full curtain front idea, being only an illustration of the principle in a small way.

CURTAIN FRONT—It is difficult to predict where the curtain front house is going to stop. We know that curtain front poultry houses, open entirely during the day, even in cold weather, and closed only by curtains during the cold nights, are being tried farther and farther north, without any falling off of egg laying, and with the excellent result of hardier and more active fowls and a lower percentage of sickness than was ever before known. That there is a limit to this experiment no one will deny, but it has not yet been reached and every step so far has been of benefit to the fowls and greater profit to the industry.

To keep the house cool in summer and warm in winter is a matter of great importance. It solves the great problem in all-year-round egg production, for you are simply imitating conditions under which the hen complies with nature in the most productive, natural season. The difference in temperature and sunshine are the main reasons why more eggs are produced in one season than in another. Thus your housing has much to do with continuous egg production.

It is our intention first to explain the various general principles and features of poultry house construction, so that you may get a fair idea of the problem to be tackled. It is no use going into the details of building until you have a clear idea of what you are building for. All this preliminary talk will familiarize you with the subject and give you a foundation for intelligent choice for your own particular needs. You are not building for a man in Greenland—you are building for yourself, on your own land, and according to your own bank account.

INTERIOR OF HOUSE

There are some general principles that should be followed as the result of the experience of others, and this experience is a capital in your business which costs you nothing and which you cannot afford to neglect. Any devices that save labor, protect against vermin, promote the health of your fowls and add to your profits, should have your keenest investigation. Some of them may appear to be small matters, but they have cost others much thought and worry.

FLOORS—Have the floors of your house clear—that is have no fixtures on the floor level. Roosts, feeding troughs and drinking founts should be on platforms elevated from the floor, as it will be very much easier to keep the floor clean if it is free from fixtures of all kinds.

The kind of floor rests with you as a simple problem of cost. If you wish the very best, a cement floor is the most sanitary and lasting, though its first cost is high. If you wish the next best, we would advise the board floor, as it can be easily cleaned. The earthen floor remains to those who feel that they cannot afford the others mentioned. While it is much used, it has the disadvantage of absorbing the droppings of the fowls and will require digging out and renewing at more or less frequent intervals. The process of laying board and cement floors will be found under different headings.

EARTHEN FLOORS—Fill in up to the sills with small stone, or coarse gravel, pound it down well and cover with earth and, if you mix the earth with coal ashes, it will make a good, hard floor after being well tamped down. This raises your floor so that surface water will run away from it. If the ground is, unfortunately, in a hollow, it will be well to raise your sills much more than eight inches and, in some cases, eighteen inches would be little enough.

BOARD FLOORS—In laying a board floor, allow for an eight-inch space beneath it, with openings for ventilation and for the cat to get in and out to drive out rats and other marauders. Have floor tight and level.

CEMENT FLOORS AND FOUNDATIONS—Concrete is not as expensive as stone, where the stone is laid in mortar and pointed up, and is much more satisfactory. It is equally as rat proof, less liable to heave by frost or moisture, and is easier to make. For such a light building as a poultry house, the foundation walls need not be more than eight inches thick, but they should extend below the frost line so that they will not be disturbed. To make a grout (cement) wall, you must make a frame or mold to hold the soft material until it has set or hardened. First drive a stake where each corner of the building will come. You can then stretch a cord to stakes driven two feet beyond each corner in all directions. Other lines may be stretched from stakes eight inches inside the corner posts, to mark the inside limit of the wall. The trench must be dug enough wider to permit of driving stakes for the retaining frame, and such stakes must be driven on the outside surfaces of the retaining frame so that the mold will have an inside surface that will make the wall smooth on both faces. The wooden frame should be perfectly level on the top so that your building will also set level.

The best Portland Cement is the cheapest, and use only clean, sharp sand. Mix one part of cement to four parts of sand when dry. To this add five parts of clean gravel or fine cracked stone. First mix thoroughly when dry, and then mix with water until every particle of cement is evenly

mixed throughout the mass. The whole secret of good solid work is in the quality of cement and sand, and in the most thorough mixing. When in a soft condition it should be thrown into the frame and well tamped. It will require a day or two for the wall to set, when the frame can be removed and the trench filled in with earth.

The cement floor is drier than any other and, as it is more durable, great care should be taken in laying it. Your floor should have a properly drained foundation, which is provided for by filling in with fine stone to within two inches of the top of the foundation walls, and over this should be spread the same kind of grout used in the foundation walls. Then lay your sills on the foundation walls perfectly level. On top of the floor lay a dressing of one part of cement and four parts of sand. This should be troweled perfectly smooth and level, and should be well flushed up against the sills to prevent the entrance of moisture between the sills and foundation. Some prefer to embed the sills in the top of the wall, making wall flush with top of sill.

ROOSTS—Roosts should be made of 2x3 stuff set edgeways with corners slightly rounded. Many patent roosts have oil cup attachment to prevent mites from crawling on the fowls at night, but while they are excellent, they are not absolutely necessary, as the poultryman can keep the houses entirely free from mites and other vermin by using the proper exterminators and attending to them frequently.

Illustration No. 7.

DROPPINGS BOARD—

One of the greatest necessities is a droppings board under the roosts. It should be made easily removable for cleaning and is one of the best safeguards for sanitation. The usual way of arranging the roosts is to have them close to the north wall, and at about half the height of the wall. Below the roosts is the movable droppings board and below the droppings board are the nests.

NESTS—These should be easily movable and rest on the floor. The entrance should face the rear of the house which will prevent the fowls from throwing litter into the nests

while scratching, and it will also help to keep the nests dark and prevent the egg eating habit.

TRAP NESTS—Trap nests are different in construction from ordinary nests. They should be located along the side wall. One trap nest for every five hens will be plenty.: Trap nests are not easily removable so will require extra care to keep them clean. These nests differ from ordinary nests in having no way of escape for the hen after she once enters the nest. There are many styles of trap nest on the market. The poultryman can take his choice—the simplest being the most practical—or he can make his trap nests at home at small cost. Of course there is some extra labor connected with the trap-nest system. The nests must be visited at frequent intervals during the day and the laying hens liberated. But in these days the trap nest is a necessity. It weeds out the non-layers and the lazy layers, or rather it gives

the poultryman a chance to do this—for with his trap nests to show what each hen is doing he can tell which fowls are money makers, and which are merely boarders and loafers. Laying qualities will vary greatly, even with hens of the same strain and under the same good treatment. Keep the hens having the best trap nest records. Watch the winter trap nest records especially. Keep these profitable birds for breeding.

One of the greatest helps of the trap nest system is that it makes it possible for the poultry man to identify each egg, know just which hen laid it and by her record decide whether it should be kept for hatching. It isn't always the good looking hen that lays the egg and frequently some of the best layers are sacrificed at the end of the season, while good looking but poorly performing fowls are kept over for breeding. Then the poultryman wonders why it is that his stock grows more and more shiftless about laying. The man with the trap nest knows—not only what each hen is doing but what he himself is doing by his system of working.

THE FRESH AIR HOUSE

The Tolman Twentieth Century Fresh Air House is probably the most popular of the extreme type in this house and the steady increase in the number used each year indicates they are giving general satisfaction. With this house the south end is run wide open summer and winter, storm or shine. It can be used in the coldest sections of the United States and many parts of Canada, but in bleak and extremely cold locations where the temperature goes to zero and frequently below it would be well to arrange a coarse muslin curtain to drop in front of the roost platform at night during the most severe weather. There are several strong points in favor of this house, the chief one being that it promotes health, vigor, a good egg yield with increased fertility and solves the question of perfect ventilation. Breathing a greater amount of oxygen, creates a better circulation of blood and the fowls are kept in the best physical condition all the time. The peculiar construction of the house and position of the roosts makes it comfortable for the fowls at night and prevents any danger of their roosting in a draft. Owing to the good ventilation the house is dry and free from frost at all times.

This fresh air house is a very simple one to construct, being a plain hip-roofed building with a long pitch of the roof to the front or south. For the roof, east, west and north sides, inch boards shingled are recommended, however, any material suitable for poultry house construction can be used so long as the walls are perfectly tight. When a small house is built it should be eight feet wide by fourteen deep, four feet high in front, five feet at rear, and about seven feet at the peak of roof. The originator favors a size somewhat larger than this to meet the requirements for all kinds of weather and locations with a capacity for from 65 to 80 layers. This house should be fourteen feet wide by twenty-

Illustration No. 8.

The Fresh Air House.

one foot deep, six feet high on the north and four and one-half on the south. The highest part of the roof should be ten feet from the ground. In either size house a full size window should be placed in the middle of the west side and the door in the center of the east side opposite. In operating this house in the summer both the door and the window are removed and replaced with wire netting. The south front which is always open is covered with one inch mesh wire netting and a gate in this gives the fowls access to the yard. A double boarded floor is recommended and roosts and droppings board should be built along the north wall as in other houses we describe. In such a deep, narrow house the roosts will extend farther out towards the front than is usual and for this reason we would place the nests along the west wall, keeping them up from the floor.

A STANDARD POULTRY HOUSE

Another very practical house is the Standard Poultry House. We give it this name because it is equally serviceable for the farmer or for the regular poultryman. The poultryman's experience in the business may justify him in paying out more money for poultry house construction than the farmer, or the amateur, may care to invest; so we describe different ways of making floors, etc., that a choice may be taken in the matter of cost.

The design we give is subject to as many additional pens as may be desired, though the length given, 32 feet, allows for two pens accommo-

dating from 35 to 40 fowls each. The house will be 12x32, or 12x16 for each pen. Considering the height of seven feet in front, the depth of twelve feet is sufficient, as we require the sunlight to reach back as far as possible.

For the cheaper construction, this house should rest on cement piers or, where they are not available, on posts driven into the ground. There should be twelve of these piers, one at each corner, one

Illustration No. 9.
Standard Poultry House.

at the middle of each end, and three at front and rear at equal distances between the corners. Remember that the number of piers mentioned provides for the whole building of two compartments. These piers should extend below the frost line and, at least eight inches above the ground. The sills resting on these piers should be of 4 x 4 scantling, while all the rest of the frame can be of 2x4 stuff, except the rafters which should be 2x5.

Illustration No. 10.
End View of Standard Poultry House.

WALLS—The walls of this house, on every side except the south, are made of one inch thickness of matched pine lumber, and it is best to put the planed side inside, as it improves the appearance and is more easily whitewashed. The outside, except the south, is covered with a thickness of good roofing, and should be painted some light color that is more attractive than the original color of the roofing, and it also adds to the durability, which counts in poultry house construction. The only part that is double boarded is the portion that is directly back of and above the roost platform and as far as it extends forward. An air space is formed between the studding and the outside boarding and, if you will leave a little opening at the top and bottom of the inner boarding, the warm air of the house interior will circulate through the space and will keep it warmer than if the air were dead. The circulation mentioned will keep the inside plate warm and will prevent condensation of moisture to a wonderful degree.

FRONT—The front of this house is made of one thickness only of ordinary cove siding and is without paper, making a loose construction. This kind of a wall warms up the inside air when the sun is shining and the warmth does not readily pass out because the other three sides are free from draft. It may seem a little strange that if a window is left open in the front of a street car vestibule, the motorman who sits directly opposite will notice but little wind, if he keeps the door closed behind him. If your three walls and top are tight, the air can only come in gradually at the front and can, therefore, change the temperature but very slowly. The principle is the same in either case.

In making the frame work, the studding is placed four feet apart and the rafters two feet apart from centers. The boards are laid horizontally. Nearly the whole front is filled with window and other openings, and is of cheap and easy construction. This house provides fresh air in abundance without drafts, and will insure all reasonable dryness. It is as warm as it can be, while securing ventilation and freedom from dampness, without having artificial heat, or heat from overcrowding the fowls.

The well ventilated house allows the moisture to pass away without condensing on the walls, and is much warmer than a tightly closed house, as moisture makes a house cold by evaporation, as you would cool a room by sprinkling the floor.

The house should have an abundance of sunlight for several reasons: Fowls do not like dark places except when sitting or laying or else when they are sick, and the light is necessary for sanitation. If the windows are placed near together, as shown in illustration, both pens will receive the light from both windows providing that the front portion of the inside partition is of wire netting. There will be ample room for door in partition, thus avoiding draft in the continuous houses.

WINDOWS—The windows should measure about 3x5 feet and can be fitted with 8x10 glass. They are stationary and should be screened with

Illustration No. 11.
Ground Plan of Standard Poultry House.

a wire netting on the inside to protect the glass should the fowls attempt to fly through the window. Each apartment is also covered with a muslin-covered frame 10 feet by 3 feet 4 inches, that can be raised or lowered as required. The bottom of the opening is 3 feet 4 inches from the floor. As all openings come nearly to the top of the roof, they will provide for the escape of warm and foul air in hot weather.

SCRATCHING SHED—You will note that this house is a scratching shed over the whole area, as all roosts and fixtures are raised from the floor on platforms, leaving a clear space for the litter in which the fowls exercise.

THE DOUBLE-DECKED HOUSE

The next house that we illustrate seems, at first glance, to be a small affair, but it is really a case of making the most of a given space, and will accommodate forty fowls in each pen, or eighty for the double house, at a cost that should not exceed fifty cents per hen for building. There are a great many features of this house that will appeal to the practical poultryman

and it would be wise to investigate its merits before fully deciding upon your method of building.

This is really a two-story house, having its scratching shed on the lower floor. If you will take the measurements from the bottom of the door to the roof, you will notice that the full height of the ordinary house is provided for upon the upper floor, 7 feet in front and 5 feet at back. One difficulty of a scratching shed is the fact that a fowl always scratches with its head to the light, so

Illustration No. 12.
The Double-decked Poultry House.

that the litter will always be found piled up in the darkest corner where it is the hardest to get at. The utility of this form is that the rooms are entirely independent, and there is nothing to prevent having tight windows at opposite points on the lower floor. The temperature is not such an important part as upon the upper floor. The lower compartment also provides an ideal place for a dust bath, thus avoiding dust in the roosting and living quarters. There is no reason why the upper floor should not also be used as a scratching floor, which will allow more square feet per fowl than is usually provided for.

This house is much used in the west; it admits of all modern improvements and conveniences, and we can see no reason why it should not become popular in any location and climate. Besides all this, the house is really much handsomer than the usual squatty, shed-like structure, is a saving in labor and money, and is of compact cheap construction.

The elevation of the house as shown in illustration No. 12 is ten feet at front and eight feet at back, but it can easily be made higher if more height is desired on the lower floor. It is ten feet deep by twenty-four feet long, providing two rooms (upper and lower) to each pen 10 x 12 feet, making 480 square feet of floor space under a roof one-half the size usually necessary for the same accommodation. There is a labor saving in cleaning and the house can be extended by as many pens as may be desired.

The original idea of this house was to have a dirt floor on the lower

story, but we would prefer a board or cement floor for sanitary reasons. No matter how carefully you may rake or scrape a dirt floor, a portion of the filth always soaks into the ground, and it is next to impossible to get rid of it. The accumulation eventually becomes dangerous to the health of the fowls and we consider the extra cost of a floor a very wise investment.

Note some other excellent ideas in this illustration. The roosting room has splendid ventilation and the use of curtained frames provides all air needed without drafts. For very cold climates roost curtains can also be provided as described for other houses.

The projecting roof on front makes a good rain protector and keeps the water from the lower story. Front curtains are 9' 6" x 3'—the full width of the cloth, and the openings could be made still larger, as required. Common unbleached muslin makes an excellent curtain. The interior can be arranged as described for the standard house, with elevated roosts, feeding troughs, drinking founts, etc. If deemed advisable, curtains can also be provided for the lower floor for use in colder weather, and could be hooked to the ceiling when not required.

This house will cover eighty head of grown fowls nicely, and if cleaned regularly, as any house should be, and the inside whitewashed once in six months, it will provide for all the requirements of the careful poultryman and keep his fowls in absolute health, activity, and comfort. See illustrations Nos. 10 and 11, Standard Poultry House, for interior plans.

In the houses which we have illustrated, all the principles of correct housing have been fully set forth. We might go ahead and show plans for a dozen shapes and styles and be no better advisers to you than we have been here. Construct your houses in any manner suitable to your exact case, let the houses be continuous, or colony style, but keep in mind the great ideas of DRY FLOORS, ABUNDANT VENTILATION, NO DRAFTS, and you cannot go astray, always providing you do not overcrowd. Build large enough to accommodate the full number of fowls you expect to keep.

SELECTION OF BREEDS

This subject may well be considered the foundation to success or failure in the poultry business and it should receive your careful thought. You are going into the business for profit, so do not be content with scrub stock for it makes a poor investment. We do not mean that you should purchase "fancy fowls" or "show birds", but endeavor to obtain thoroughbred fowls or eggs from thoroughbreds.

The poultry business is no exception to the rule that if you desire paying results, you must have a *foundation* for success, and no man can succeed who builds with poor stock. It costs no more to feed and care for a standard fowl than a mongrel, and you cannot realize high class results from the latter. From such attempts have come some of the failures recorded against the industry. You would not try to run a dairy without the very best grade of stock, nor would you expect the best crops without planting the best seed obtainable. This is the point on which many poultrymen fail, so make it a point to start right. Select a breed that is making a good showing for your particular purpose; and have your stock of some reliable strain. Make sure that the birds are healthy and vigorous individuals.

In every line you will find a man who has a hobby. Watch out for

Illustration No. 13.
Barred Plymouth Rock—American.

him. He is a good talker, believes in himself and his hobby, and is forever seeking converts to his wonderful ideas. Follow the advice and methods of the man whose ideas are paying him and whose experience is showing in actual dollars and cents. It is a case where money talks and outweighs fads and fancies. Experience is often an expensive teacher, so let the knowledge of the man who is winning be a help, and take the short road to profit.

It is generally more profitable to keep but one breed of fowls, and much care should be exercised and investigation made regarding the stock for the climate and location, instead of going into the business blindly.

DIFFERENT BREEDS—The space in this little book will not allow us to fully describe all the different breeds of fowls. Every poultryman should procure a copy of "THE AMERICAN STANDARD OF PERFECTION," which gives the weight, shape, markings, and color of each breed for male and female, as well as all points for judging value. This book, which is published by the American Poultry Association, is the guide for all poultry judges in the awarding of prizes. It is revised every five years and sells for the uniform price of \$1.50. The most popular breeds just now seem to be the Leghorns, Wyandottes, Plymouth Rocks, Rhode Island Reds and Orpingtons. But we must not infer from this that there are not other breeds with qualities equally good. According to The Standard of Perfection, the different classes of fowls may be noted as follows:

AMERICAN CLASS—Plymouth Rocks, Wyandottes, Javas, Dominiques, Rhode Island Reds, Buckeyes.

ASIATIC CLASS—Brahmas, Cochins, Langshans.

MEDITERRANEAN CLASS—Leghorns, Minorcas, Spanish, Andalusians, Anconas.

ENGLISH CLASS—Dorkings, Redcaps, Orpingtons.

POLISH CLASS—Polish.

DUTCH CLASS—Hamburgs.

FRENCH CLASS—Houdans, Crevecoeurs, La Fleche, Favorelles.

GAME AND GAME BANTAM CLASS—Games and Game Bantams.

ORIENTAL GAME AND BANTAM CLASS—Indians, Sumatras, Malays, Malay Bantams.

ORNAMENTAL BANTAM CLASS—Sebrights, Rose Comb, Booted, Brahma, Cochin, Japanese, Polish.

MISCELLANEOUS CLASS—Silkies, Sultans, Frizzles.

In the Standard of Perfection the above classes are again subdivided into the several different varieties of each particular breed, but our space allows us only to mention them in a casual way.

DUCK CLASS—Pekin, Aylesbury, Rouen, Cayuga, Call, East India, Crested, Muscovy, Indian Runner, Swedish.

GEESE CLASS—Toulouse, Embden, African, Chinese, Wild or Canadian, Egyptian.

Illustration No. 14.

Cochin—Asiatic.

Illustration No. 15.

Orpington—English.

TURKEY CLASS—Bronze, Narragansett, Buff, Slate, White, Black and Bourbon Red.

FEEDS AND FEEDING

must depend very much upon three points: The kind of machine you use, the quality and quantity of raw material which goes into the machine, and the kind of a man you have to run it. In this connection the domestic

Illustration No. 16.
Leghorn—Mediterranean.

fowl may be compared to the machine. The feed is the raw material which goes into the machine and it must be balanced correctly to produce eggs or meat—which ever you are trying to obtain. The man in charge should know his business, not only to correctly feed the machine, but to properly care for it, repair it, and keep it in working order. It sounds easy, but every poultryman knows it is a problem worthy of much study and attention.

The first thing is to realize a few facts regarding the domesticating and training of what was originally a wild fowl in the jungles of India. Nature made her lay but twelve eggs a year, and then only in proper season. We have trained her to lay 160 eggs a year and at all seasons and, while many people who do not know, tell you to follow nature, don't attempt it, for it is a hindrance to the poultryman instead of a help. In this day of advancement a poultryman must follow science instead of nature. It is dead against the nature of a fowl to lay an egg in winter, and that is when we demand them because we can secure high prices then. We must have our feeds very much better, and easier to assimilate, than nature contemplated, and we must give more warmth and care than nature provided. We are demanding very unnatural results under very unnatural conditions and must make up the difference.

A certain percentage of the failures that poultrymen have met with is directly due to the matter of feeding and an entire flock can be ruined in a very short time by improper and careless feeding.

To maintain perfect health and vigor in your fowls you must consider for what purpose you are feeding, and give them a balanced ration, which means a supply of food containing every element necessary to properly supply all that you demand and at the same time insuring the health of the fowl under forced confinement and unnatural conditions. You should understand the value of foods and supply them intelligently.

We might go into the question of special feeding for different purposes; feeding the little chicks; feeding for broilers; for roasters, etc., etc., all of which require special consideration. But, in the limits of this little book, we can only touch the subject lightly here and there and give you a fair idea as to general requirements. While we will do our best to give such hints as our space will permit, we wish to impress you with the fact that there is a deep study coming to the man who wishes to succeed; that it is not guess-work or hap-hazard chance, but a subject for thought and serious attention of the man who has his money invested.

In poultry journal items, and in scientific treatises on feeding, an ordinary man runs up against a lot of terms which he does not usually understand, and, even when he becomes familiar with them by seeing them often,

he still fails to fully grasp their meaning and application. We will endeavor to explain a few of them in the simplest possible manner.

PROTEIDS—Proteids are the foods which renew the waste of the fowl. In any animal there is a continuous process of waste which must be as continuously renewed. In the fowl there is not only the natural wear of the body, and the natural excretions of moisture, etc., but there is manufactured and voided each day, an egg of the average weight of one and three fourths ounces, which would equal three pounds in human beings of average weight could they be forced to do a like stunt.

CHICK FEED—Mixture of 1 part each, by weight, of Corn, Wheat, Hulled Oats or Pin Head Oat Meal, and Kaffir Corn, cracked, screened, and sized suitable for chicks. To this add 1 part of Millet Seed, $\frac{1}{2}$ part Grit (chick size), and $\frac{1}{4}$ part Charcoal (chick size). We would also recommend any of the high-grade chick feeds on the market.

The elements of food which build up the young chick in bone, flesh (not fat) and feathers, and which supply the tremendous waste in the grown fowl, are called proteids, and life cannot begin or continue without them. Protein does not come alone in any one food, but is mixed with other elements. The following list of foods are very high in proteids and are, therefore, called protein foods: Cottonseed Meal, Flax Meal, Linseed Meal, Gluten Meal, Brewers' Dried Grains, Malt Sprouts, Wheat Middlings, Bran, etc. Now: because of their high protein value, these various foods are rich and they must not be fed as liberally as you would ordinary ground grains. The fowl

can take up into its system a certain amount of protein. If you feed more it is wasted, and what is worse, taxes digestion and bowel trouble is sure to follow. Many formulas recommended by common authorities are far too strong in oil meals. Include protein feeds, but watch the limit carefully. Protein is always an expensive food element, so do not waste it.

CARBOHYDRATES—These can be called the fuel of the body, as they furnish the heat. It is necessary to keep the body warm besides building it up. We burn coal to keep a living room at seventy degrees of temperature and carbohydrates must be fed to keep the fowl's temperature at its normal point, (which is above fever heat in man), or the fowl becomes chilled and dies. Carbohydrates furnish the steam to warm the egg factory and the strength with which to manufacture the proteids into eggs and new material. Carbohydrates also produce fat and make a fowl lazy and inactive unless the fowl can be made to exercise. Exercise consumes the carbohydrates in the blood, leaving the blood rich in protein to make the egg and to build up, and keep up, the wearing parts. Carbohydrates are the starchy foods, such as Corn, Cornmeal, Cob Meal, Hominy Meal, Ground Oats, Barley, Buckwheat, etc. You will find it pays best to feed a variety of grains, mixing them or feeding one or two at one meal and a different kind the next. The body gets fuller food value when there is this variety. Vary from time to time, but never make sudden changes. For instance, on a cold night a good idea is to feed all whole corn, but in milder weather mix oats with it.

GROWING FEED—Equal parts Wheat, Cracked Corn, Kaffir Corn, and Hulled Oats. Use no Oats with hulls nor Barley or Buckwheat until chicks are at least two months old. Use Beef Scraps in hopper or in mash feed, Ground Green Bone, or Blood in mash.

MASH FEED—By weight as follows: 2 parts Bran, 1 part Ground Oats, 1 part Corn Meal, 1 part Middlings, $\frac{1}{2}$ part Gluten Meal (if obtainable. To this mash can be added cooked vegetables, or steamed Alfalfa or Clover, but not to exceed $\frac{1}{4}$ of the whole mash; Beef Scrap 12% to 15% of the mash, but omit if Beef Scrap is already fed from the hopper.

ANIMAL FOODS are full of protein and take the place of bugs, worms, etc., that the fowl finds in her natural season for laying. They are Milk, Beef Scrap, Blood Meal, Green Bone, etc. Such foods (rich in protein) are positively necessary, but take care not to overfeed. A good plan is to feed beef scrap in a hopper, letting the fowls help themselves, just as they pick up bugs for themselves in summer. Many prefer to include animal food in the mash feed. Milk in its various forms is often fed this way. Of course milk is one of the best animal foods. In feeding green bone, be careful not to feed too much, or bowel trouble will surely follow.

GREEN FOODS—These take in all kinds of fruits, vegetables and growing grasses and grain. Alfalfa Meal, Clover Meal, Sprouted Oats, Cabbage, Beets, etc. All fowls should have some green food daily, to get the best results. One of the most valuable of green foods is sprouted oats, for which read special section. Like the others green foods help furnish the domestic fowl with its properly balanced food supply according to the needs of nature.

BALANCED RATIONS—A balanced ration is one so made that it furnishes just what the fowl needs. Balanced rations are selected and compounded from the foregoing according to knowledge of what is required, at various seasons, to produce eggs and meat in addition to maintaining normal health and vigor. We must take into consideration that we demand vastly more from the fowl than nature ever did; that we twist the seasons so that the fowl will lay in winter, and that we have to supply food to meet these requirements over and above what nature would provide when the fowl was idle. We are giving a few formulas for feeds and, while they are excellent in themselves, they should be frequently varied. Ingredients of *equal value* should be substituted as often as possible. Fowls cannot thrive on a continuous diet, but, like ourselves, require a change. Their appetites flag on one line of food and your profits grow correspondingly less.

OTHER FEEDING POINTS—It is not only what to feed, but how much and how often, that determines success. A laying hen should have at least six ounces of food per day, which seems an enormous quantity in proportion to her weight, until we consider the great drain upon her.

Beginners are very apt to forget some of the essentials of poultry feeding, the lack of which causes serious complications and disorders. Grit, Oyster Shell, Mortar, Charcoal, Green Cut Bone (or other animal food, and pure fresh water, are the very items which should never be forgotten. It is a wise idea always to have such food before the fowls. We might make one exception to the above and that is not to feed too much Green Cut Bone, but alternate it with other animal foods from time to time. One pound of Green Cut Bone to 20 fowls is enough at any one feed. More will cause bowel trouble. The whole secret in feeding Green Cut Bone is in small amounts often, not large feeds just once in a while.

SCRATCHING FEED—Mixture of Wheat, Oats, Corn (Whole or Cracked), Barley, Kaffir Corn, Buckwheat, and Millet Seed.

Sunflower Seed can be added. Cut out Buckwheat in summer.

EXERCISE—Exercise is as necessary as food, and fowls cannot thrive without it. Make them work for their living. Unless the fowls have free range, it is wise to feed all grain by scattering it in a six inch litter of straw, cut alfalfa, leaves, or anything that will make them work by scratching.

Remember that their food will do them little good if they are troubled with lice. Lice will take away their vitality and their flesh faster than food can put them back. Watch out for lice, and fight them at all times with the best lice killers that you can procure. A general idea of what should be done, mixed with a little good, common sense, is the best rule known.

Conkey's Lice Preparations will soon put the parasites out of business and a little of Conkey's Roup Cure, occasionally placed in the drinking water, will tone up the birds and prevent colds and other troubles.

FEEDING THE CHICKS

Young chicks should be given no food whatever, for the first 48 hours after hatching. The very last process of incubation is the absorption of the remaining portion of the yolk of the egg. This absorption is Nature's way of feeding the chick at the start, and it should not be interfered with by giving them other food. A little fine grit, or coarse sand, should be within their reach when they are first placed in the brooder and this should be kept constantly before them. They should also have plenty of cool fresh water. This should be given them in founts made for the purpose, which will not allow the chicks to become wet and chilled.

The chicks should never be fed sloppy food, even if you have to confine yourself to the feeding of dry mixed grains. Chicks are usually fond of a mash feed and are inclined to stuff themselves with it if allowed to do so. Where this is given avoid feeding too much at a time and never give more than they will clean up, as it sours and sickens them. There can be no objection to the use of a light mash feed once a day, but it should not be given oftener unless you are forcing chicks for broilers. Chicks that are to be raised to a useful maturity should be fed principally on dry grains, such as any good "chick feed." Many successful poultry raisers keep dry wheat bran before the chicks from the time they are hatched and this largely takes the place of a mash feed.

Under natural conditions, the hen will lead her brood, scratching a little here and there, and the chicks, in turn, picking up a grain at a time, will obtain a balanced ration of all dry feed. If we follow the mother hen as to method of feeding we are not likely to make much of a mistake. Exhaustive experiment has been made along this line and different people hold different views, but the majority of opinion is greatly in favor of the dry method as a means of preserving the chicks against diseases of the digestive organs, most often termed Cholera. The dry feed should be made up of dry grains, properly proportioned, and ground or crushed to the right size. Feed the little chicks four or five times a day, but give them only such a quantity as will keep them active. The brooder floor should be covered with a light litter of cut clover, hay, or straw or scratching material. Exercise is just as necessary for chicks as it is for fowls and unless they have free range all grains given them should be scattered in the litter or raked into the earth in the run, so the chicks will be kept busy scratching for most of the day.

When the chicks are one week old, begin to give them a little green food and increase gradually as they grow older. Onion tops, clover leaves,

lettuce, cabbage chopped fine, and grass or tops from sprouted oats cut into short lengths, less than $\frac{1}{2}$ inch, are all excellent for the purpose.

The use of animal food in some form is of considerable help in the proper development of the chick. Beef scrap, lean meat, finely ground green bone, blood meal, bone meal and milk in its various forms are used in various ways in feeding the chicks. Milk can be used liberally without harm, but the other articles mentioned must be fed with some caution. When feeding fresh bone or meat make sure that it is perfectly fresh and sweet and when beef scrap is used it should be of the best quality. Animal foods should not be given until after the first week and then only in small quantities at first. Beef scrap is one of the most popular forms of animal food in use and many poultry raisers allow their chicks free access to hoppers filled with this material. A too liberal use of the more concentrated forms of animal foods is likely to cause bowel trouble, and this must be guarded against. The right sort of feeding is the secret of raising chicks and should be attended to carefully and not wastefully. Keep the chicks just hungry enough to be willing to work for what they get. A careless feeder not only wastes the food, but will ruin the flock. Irregular care of little chicks leads to failure. One hour's chill, caused by a lowering of temperature in the brooder, may bring the setback which cannot be made up for quite a while, if ever. Continuous care is the secret of success, and systematic observation of conditions is necessary at all times. It does not do to give excellent care for ten hours, and then forget what should be done at the eleventh hour.

FEEDING FOR BROILERS

Where chicks are raised for broilers they should be fed very much the same as other chicks for the first two weeks, but after that time such a method of feeding must be used as will produce a plump carcass weighing from one and one-half to two pounds in the shortest possible time. Heavy feeding is necessary to fatten the chicks quickly and the digestive apparatus can be taxed to the limit for this process does not have to be carried on for any length of time. At the beginning of the third week a mash feed should be given once a day and the fourth week add one more feed of this material. When the chicks are a month old, three moderate feeds of mash should be given each day, finishing up the meal with a little grain scattered in the litter to induce exercise. To get the best results the chicks should be fed four or five times a day and at such times when the mash is not used a mixture of whole and cracked grains of a suitable size, as well as some green food, should be given. During the last two weeks of feeding the bulk of the food given should be mash. In feeding broilers the mash used is somewhat different from that ordinarily given to chicks, being more fattening. A mixture of five parts corn meal, four parts wheat bran and six parts ground oats (without hulls) should give good results. If oats without the hulls are not obtainable, substitute middlings of about half the quantity. Oats with the hulls should never be used for small chicks. In feeding the mash moisten the ground grains just enough to make a crumbly mass, for sloppy foods must never be used. A little bone meal and ground charcoal and a very little salt will be found excellent in the mash. Animal food should be given broilers same as other chicks and green foods supplied daily. Broilers should not be given free range or the use of large yards, but they cannot be kept in healthy condition or successfully grown if they are overcrowded. If conditions are favorable the broiler should be ready for the market in eight to ten weeks.

SPROUTED OATS

Since the value of sprouted oats for use as a green food for poultry has become generally known, it has steadily grown in favor. They are greatly relished by the fowls, are inexpensive and can be fed to chicks as well as fowls. When chicks are small only the finely chopped tops or blades should be used. The process of sprouting the oats is a simple one, but there are several facts in regard to it that are well worth knowing. For sprouting purposes new, heavy oats should be used. Trays should be started at such intervals as will keep the supply constant. The amount started at one time would vary with the size of the flock, but should not be more than will be used in three to five days. If the oats are kept too wet after they are partly grown, or if not used after a certain time, they will become sour and rapidly rot. Just what quantity of sprouted oats should be used for a given number of fowls would vary some with conditions. A strip or section containing sixty square inches is a safe amount to use for one hundred hens, but more can be used if it does not cause looseness of the bowels. During the summer oats can be sprouted out of doors, but in cold weather they must be kept inside where the temperature is high enough to keep them growing, and the warmer they are kept the faster will be their growth. A warm cellar makes a very desirable place. The use of trays for sprouting the oats has been found to give the best results and they should be made only large enough to hold oats for three to five days' feeding. About four trays will then be necessary to supply the fowls with oats at such a time as they are most suitable for feeding. For one hundred fowls make four trays about fifteen by twenty inches. The sides and ends should be one inch boards six inches wide. Cover the bottom of this tray with lath previously soaked in water to prevent splitting and bulging and have them just close enough to keep oats from going through the cracks. Nail a piece of lath flat ways across either end on the bottom of the tray. This permits drainage, but does not dry out the oats too rapidly. Make a sash to cover each tray, fitting it with glass or oiled muslin. This sash is for admitting light and holding the warmth and moisture. Five pints of oats should be evenly spread over a tray of the size mentioned above and thoroughly sprinkled with warm water. Carefully cover the entire surface of the oats with two to four thicknesses of burlap and again sprinkle. This sprinkling process should then be repeated once a day, or oftener if the temperature is high. Do not disturb the oats after they are placed in the trays. They will sprout evenly if kept wet and warm and stirring will break the tender sprouts. After the sprouts are about an inch high, remove the burlap and cover tray with sash. Keep the sash on till oats are about three inches high, when it can be left off for good. Begin feeding when sprouts are about four inches high. Some judgment must be used in the treatment to suit the varying conditions. To remove from tray, cut down through sprouts and roots and peel the oats from the lath bottom. If each tray is refilled as soon as emptied there will be a constant supply of the oats, providing the proper number of trays are in use.

When we consider the food value of the sprouted oats and the fact that a feed for one hundred fowls can be produced from one pint of oats at cost of less than one cent, it can be readily seen why this form of green food is so universally recommended.

INCUBATORS AND BROODERS

Nothing has played so important a part in raising the poultry business, from a simple pastime to a great industry, as the incubator and brooder. In the value of its output the poultry industry is second to none in the world. During the experimental years, results were far from promising or satisfactory, but today there are a large number of excellent machines in the field, which work mechanically, require practically no attention, and which bring to life a high percentage of the fertile eggs intrusted to their care.

A perfect incubator has, first, a perfect radiation of heat, controlled by an active thermostat that will regulate the slightest change of temperature in the egg chamber; second, the necessary amount of ventilation. Each manufacturer has his own way of controlling these matters and there are many reliable makes it would be safe to choose.

No poultryman can hope to succeed in building up a large business, in any way satisfactory or profitable, without an incubator and brooder of some standard make. They are absolute necessities in the present day.

Some people make the great mistake of buying a good incubator, expecting to make a brooder of their own, or to provide some scheme to get along without one. We advise most strongly against this error! It is a comparatively easy matter to hatch chicks, but to raise them is the problem and one great help in this is a high grade brooder.

The brooder is made in two patterns—the indoor and outdoor. Those arranged for indoor use are, as a rule, the more successful though the outdoor brooders answer admirably.

Absolute cleanliness in brooders is a positive necessity, as right there is laid the foundation of the future health of the chick. Filthiness and disease generally go together.

A brooder should be roomy and well supplied with heat, always from overhead. Provision should be made so that chicks do not crowd, as they are very apt to do if the temperature is not right. If too cold they will at once huddle together and many may be smothered. One of the greatest mistakes made by poultrymen is trying to keep too many together. As they grow older they should be separated—fifty chicks in any compartment being enough—and as they mature, even a smaller number is better.

FIRELESS BROODERS—All the heat that is needed in a poultry house can be obtained from the fowls' bodies if the house is correctly designed and built. The same principle is now used in the fireless brooder for little chicks, which is a well-ventilated, padded box that holds and evenly distributes the heat from the bodies of many chicks together.

It is a very important item that the heat be so distributed that the same temperature is kept up in the various parts of the brooder and that the ventilation is well distributed. Fresh air and equal heat are the serious problems.

In mild weather fireless brooders can be used out of doors, but equable temperature is a necessity for, should chicks run from an inner temperature of 80 or 90 degrees to an outside air at freezing point, you could look for colds, roup, bowel troubles, and death. The logical place for the fireless brooder is in a room or brooder house where the temperature outside the brooder can be maintained steadily at a point above freezing. Some claim that much greater extremes are all right, but we would accept such statements with caution.

HOME-MADE FIRELESS BROODER—A home-made, fireless brooder may be constructed as follows and it will answer all practical purposes: Take $\frac{1}{2}$ inch or 1 inch lumber and make a box 11 inches high and 20 inches square. Rip the box 5 inches from the top and 6 inches from the bottom, and hinge on one side so that they will close as they were before being ripped. In each end of the top bore three 1 inch holes and, from the two center holes (one on each end) have tin tubes running from holes to points 4 inches from center. Leave other holes as they are. These holes are for ventilation and the tubes from two of the holes will convey the air to and from center of brooder, while the other four will ventilate the outer edges. Make a frame to fit into bottom part and set on cleats so as to come flush with point where bottom and top of box join. Tack porous cloth to this frame, either canvas or muslin, and let it sag in the center to within 2 inches of bottom of box. On top of this canvas or muslin put pads of cotton batting, say a layer about 2 inches thick. Have this layer of padding such that you can gradually lessen it as the chicks grow. Remove it entirely at 3 or 4 weeks if weather is mild. Later you can remove the cloth entirely. The bottom part of this box line with felt on sides and always have a warm litter of finely cut straw or clover in the bottom. Leave an opening in front of the box $3\frac{1}{2}$ inches square for chicks to go out and in. If nights are very cold it may be well to partly bank up opening with litter so as to keep out some of the cold, though the opening should not be closed entirely as it also provides ventilation. This brooder will be found all right. As many as fifty chicks may be kept in the brooder for one week, twenty-five for three weeks, and twenty until they weigh $1\frac{1}{2}$ pounds each. There are also many styles of fireless brooders on the market that may be bought reasonably and save the trouble of making.

MATING—No matter how well situated your poultry farm may be, or how good its buildings, or how excellent your incubators and brooders, success cannot be obtained unless you can secure strong and fertile eggs. The first consideration must be the health of your stock. The male birds must be kept in vigorous health and the number of females with which they are permitted to run must be limited. With the American and English breeds, one male to each ten females, with the Mediterranean, one male to each fifteen females, and with the Asiatic, one male to six or eight females, are about the right proportions.

SELECTION OF EGGS—Care should be exercised in selecting eggs for hatching. There is a great difference in eggs and, although it is not generally known, it is possible to arrive at some idea of their hatching qualities before they are placed in the incubator. An egg which will produce

Fresh Egg

Dead Germ

Egg at 7 Days

Air Cell at
Hatching Time

Illustration No. 17

a fine, strong chicken will have a shell of even texture. If, by holding it between your eyes and a good, strong light, the shell appears to be porous or patchy, or if you detect a ridge or thickness encircling the egg, usually at the center, discard it. Again, the air cell in a fresh egg is always small. As the egg becomes older this air cell increases in size. A few practical tests will teach you the difference, so that you can surely and quickly make the proper selection.

INCUBATION—Keep the temperature in your incubator at 103 degrees and, after the selected eggs have been kept therein for seven days, they should be tested by holding them in front of a strong light, concentrating the light so that it will pass through the shell. All eggs which appear perfectly clear are unfertile and should be discarded. These discarded eggs can be saved as they form an excellent food for the young chicks when hard boiled. A fertile egg at seven days in the incubator will show a dark spot from which, as a center, blood vessels will radiate in different directions. If, however, you discover an egg containing a dark spot, around which is a dark circle, discard it also, as this is a dead germ, killed by the bursting of a blood vessel as a result of overheating. The air cell increases in size as the chick matures until, on the eighteenth day, it should occupy nearly one-third of the egg space.

Eggs should be tested on the seventh and twelfth days and all containing dead germs should be removed.

If conditions are right, chicks should break the shell on the nineteenth day and the entire hatch should be over by the twenty-first day. After the chicks begin to hatch, the machine should be kept closed until the chicks are ready to remove to the brooder.

After they are well out of the shell, chicks should remain in the incubator until thoroughly dry and they become sufficiently strong to be removed to the brooder. This usually occupies about 48 hours.

LITTLE CHICKS—To hatch the chick is important; but to raise it is the problem. There are two great enemies—disease and parasites. We have referred to the various digestive troubles which come from wrong feeding and which are generally grouped under the name cholera. These can all be successfully treated by **CONKEY'S CHOLERA REMEDY** in the drinking water as elsewhere fully described. There is another even more serious trouble called White Diarrhoea. It shows as a white pasty discharge and may come on any time between the third and the twenty-first day of the hatch. The gummy substance hardens and closes the vent. The disease is very contagious and the little chicks die by thousands each season—in fact White Diarrhoea carries off each year from 60 to 75 per cent of all chicks hatched. This disease has long baffled poultrymen. We have only recently found a remedy for it, **CONKEY'S WHITE DIARRHOEA REMEDY**, which you simply put in the drinking water and let the little chicks cure themselves. Even those badly pasted up behind can be cured, but first you must remove the hard accumulation. A drop or two of oil will soften it and make the operation easy. Sometimes warm water is used, but in this case special care must be taken not to get the chick wet.

White Diarrhoea is best treated by preventive measures as explained under diseases. Conkey's White Diarrhoea remedy can be relied on. It is always easier, and cheaper, to prevent than to cure.

Parasites are another great cause for the heavy loss of little chicks. Of these lice are the worst, and there are three distinct kinds of lice—head lice, body lice and mites. The head louse is the worst of all, for two or three of these big fellows will fasten on head or neck or under the wings of the little chick and sap its life. Fortunately treatment is easy, if the poultryman will

simply apply CONKEY'S HEAD LICE OINTMENT as directed. The body louse is a different proposition and must be treated with a powder. CONKEY'S LICE POWDER is guaranteed effective, and at the same time positively will not injure the health of the chick. For mites it is necessary to use a liquid, spraying it in cracks and on roosts, walls, etc., as explained page 56 on this subject. Because of the different life habits of these three distinct kinds of pests, no one preparation can possibly answer for all three. Poultrymen are sometimes misled by advertisements on this subject.

Before we leave the subject of the little chick we wish to urge again every precaution to prevent disease. It is always cheaper and easier to prevent than to cure. Besides this, once let a growing bird get in bad shape the chances are it will be stunted by the setback, even though you cure the particular disease.

TURKEYS

And now we "talk turkey!"

The common varieties of turkeys in this country are the Bronze, Narraganset, Buff, Slate, White, Holland, Black and Bourbon Red.

By far the most popular seems to be the Bronze, which is a cross of the Black (the English Norfolk turkey) with the original wild bird of this country. The Bronze turkey is now the largest and hardiest of all the varieties. Next to it in size, probably next to it in popularity also, is the Narraganset—also a cross with the American wild turkey, but with some Mexican wild turkey blood added, giving the mixture of white in the bronze and black plumage.

Illustration No. 18. Bronze Turkey.

Turkey raising is a profitable industry. It is something of a specialty and requires a little different system from that of raising ordinary domestic fowls, but the important differences are few and easily mastered. But the great thing is to actually do what's right. Knowing and doing are very different matters.

Turkeys adapt themselves easily to various climates and can be raised successfully whether you live far south in Texas or north in Canada, and thrive equally well under conditions so unlike as those found in New England and in California. Fact is you can raise them any-where if you (1) start with the right stock and (2) give the right care.

The right stock is any stock that is itself individually strong and healthy. It must then be kept so. Turkey stock quickly shows bad effects from inbreeding. The only way to keep up the constitutional vigor of the birds is to introduce new toms, selecting always vigorous medium sized males and mating each with about five mature hen birds, making sure always that the hens are also strong and vigorous. Some successful breeders consider eight to twelve hens a good proportion to each tom. Pullets do not lay eggs so large as those laid by yearling and two year old hens, and their poults are not so strong.

The right care means chiefly protecting the young poults from cold or damp, especially from wet grass and from insect vermin. Timbered land, where there is not much underbrush, is the finest for raising young poults, or pasture land, where the grass is short, and there are plenty of insects to be picked up. A flock of turkeys would benefit any farm by the amount of worms, grasshoppers, etc., thus destroyed. Right care includes also giving turkeys good, free range. These birds are still half wild and they will not thrive under the conditions that are ordinarily successful with domestic fowls. They grow very nervous and restless when too closely confined. If you are in the business for profit the right way is to give the turkeys plenty of good range, where they can get abundant natural food by foraging for themselves. But at the same time you must give them a nice grain feed every night, as this will guarantee their return home to roost. Corn is the best grain, but you should add occasionally some wheat, oats or peas, as corn alone is too fattening. Since the turkeys will roost in the open air, however, they can stand this rich grain, as it keeps them warm while in the open. The rule is to feed a little at a time, but to feed often. A grain and insect diet suits them to a T. The young poults will begin to feed themselves just as soon as they are out of the shell. In the natural state they live almost entirely on the insects and berries they pick up.

Pretty nearly the whole problem in turkey raising is to start right with the poults. For while the grown birds are extremely hardy, the poults are the tenderest of all poultry to care for. Watch them carefully up to the time when they get their first plumage and "throw the red", that is show their combs. After that they are easy to manage with the two main cautions already stated.

The young poult should be fed the first two weeks a crumbly mixture of bread and milk and pot cheese, or curd—about one-fourth should be the cheese. Add to this a little chopped onion. Two or three times a day give the little poults all of this they will eat up clean and at least once a day give them some finely cracked corn, mixed with wheat and oatmeal, equal parts by weight. After the second week, increase this grain ration, and also give more of the pot cheese, cutting down the bread and milk in the ration. Pot cheese is considered better than beef scrap for turkeys, although, of course, beef scrap is a valuable article for them. Of course, as they grow older, you gradually give coarser grain and finally the whole grain.

Grit and charcoal should be before them all the time—this is always necessary with any kind of poultry.

Water must be where they can help themselves, but it should be in a fount such as will protect the young poults from getting wet. Turkeys should always have a good supply of water.

TO FATTEN FOR MARKET—Give the turkeys free range, if possible, else they will "worry". At night, give them all the whole corn they will eat. In the morning, give them a mixture as follows: Six parts cornmeal, three parts middlings, one part meat scrap, mixed with sour skim milk. Do not let this get too soft and sticky, but make a good stiff mixture. The last week of the fattening for market put the birds in darkened coops and feed the following "cramming" ration, which you can make up into pellets and feed by hand; two parts cornmeal, two parts ground oats (without hulls), one part middlings, one part scraps, mix to a stiff dough with sour skim milk as before.

RATION FOR BREEDING SEASON—Equal parts by weight of ground oats, cornmeal, wheat bran, wheat middlings, meat scrap, mixed with sour skim milk. Oats is the best all around grain at breeding time.

During breeding season turkeys should always be given free range all day and allowed to roost at home in the open. They like high roosts and fresh air. Let them have their way and you will see their big bodies looming up on a ridge pole or some high tree branch.

Turkey hens lay from thirty-five to forty eggs during the season. Time for incubation is twenty-eight days. Some poultrymen use hens for hatching, but there is great danger from lice unless extra care is taken. However, by giving the first clutch to sitting hens you can keep the turkeys laying. Dusting the nest and hen with **CONKEY'S LICE POWDER** at frequent intervals will settle that problem. Remember that lice will kill a poult in very short time.

Young poult thrive best on woodland range, where they will not get tangled in wet grass and can pick up most of their living. But if confined, try to change their runs from day to day. Disinfect thoroughly, using **NOX-I-CIDE** to sweeten the ground and to thoroughly clean all utensils.

DUCKS

This is another branch of the poultry industry, which has not been fully appreciated. Duck raising is certainly profitable. Ducks are easier to manage than chickens, have fewer diseases and mature more quickly. But it takes good sense and proper attention to necessary details to make a success of the business.

Ducks are raised chiefly for meat, but their eggs are a valuable food product and with proper management and feeding there is not that strong flavor which has hitherto been an objection. Duck eggs are large and they always command from five cents to ten cents more per dozen in the market. For cooking they go about one-third farther. Ducks commence laying when about five months old.

The American Standard of Perfection recognizes twelve varieties: The Aylesbury, which is the market

duck of England, a slaty-white bird, good laying and rapid growing; the Rouen, brilliantly colored, marked sometimes like the original Mallard; the Pekin, which is the favorite market duck of America, the largest white duck in the world, of early maturing and good laying qualities; the Cayuga, strictly an American breed, originating around Lake Cayuga, N. Y. (black in color); Crested White; Indian Runner, called the "Leghorn of the Duck family" because of its heavy laying, smaller than the Pekin, very early maturing and growing more and more popular in this country; the Blue Swedish; the White Muscovy; the Colored Muscovy, the eccentric duck that never quacks, and also having other little peculiarities, insisting on building a nest and taking an extra week to hatch; the Gray Call, used principally as

Illustration No. 19: Pekin Ducks

decoys; the White Call; the Black East Indian—the last three being known as the “bantams of the Duck family.”

We should here give brief attention to at least two varieties—the Pekin and the Indian Runner, which are now the favorites.

The Pekin duck was first brought here from China in 1873. Pekins are a large, early maturing, pure white breed. They are much liked for “green duck” farming, as they easily weigh over five pounds in ten weeks. They have proved themselves satisfactory in every way and it is safe to say that more Pekins are grown for market than all other breeds combined.

They reach ten to twelve pounds at maturity and are excellent layers. Large plants in the East market many thousands annually. With Pekins there is an additional profit to consider in the feathers, which are pure white and command nearly double price, especially as they are elastic and largely mixed with down.

The Indian Runner meets the demand for a small carcass and good layers, especially winter laying, when most ducks shirk. Indian Runner flocks have high egg averages, as much as 180 to 190 eggs per duck. No wonder they are often compared to Leghorns as layers. The eggs of the Indian Runner are about the same size as those of the larger breeds. Ducks are hardy, but the Indian Runner is perhaps the hardiest of all. They do well under any ordinary conditions and if given free range will rustle a good share of their living. They feather early and mature sooner than the large varieties. They weigh about five and one-half pounds for drakes, and ducks one pound lighter. There are three distinct varieties, the Fawn-and-White, Brown-and-White and White. The first named is the most beautiful, also the most popular, and with their erect perpendicular carriage fairly represent the breed. They have long, flat heads, light fawn in color, with straight green bill; white neck, back fawn or gray, fawn color breast, shanks and feet orange yellow. They are mighty good to look at and just as good to eat.

DUCK RAISING—Start always with good breeds and fine, vigorous specimens of your chosen breed. The breeding stock should be selected from the early hatches, as ducks will lay about two months before the drakes are fit to use for breeding. At the beginning of the breeding season mate the drake with from five to eight ducks. Later in the season you can increase this number to ten or twelve. During the breeding season water is an advantage, but is not really necessary. In raising ducks for market it is an advantage to keep away from pools, etc., as the ducks will fatten more quickly. Young ducks can be fitted for market as “green ducks” in nine to eleven weeks, weighing easily five to six pounds. You will read many glowing accounts of ducks weighing up to nine pounds, but we make the general estimate lower.

You can easily tell the sex of the young by noting the long bill, neck and body of the drake, and the more upright carriage of the body. At two months you can easily tell the duck by the coarse quack, whereas the drake has a fine rasping note. As the drakes mature you will note the curled tail feathers, which are easily distinguishable.

Illustration No. 20. Indian Runner Ducks.

HOUSING—Ducks can be housed more cheaply than chickens. The only thing is to keep them dry as possible. Cold and snow they don't mind until they "get cold feet." Cold feet stop egg production instantly. The other important thing about housing is to have a rat proof floor. Keep the litter on the floor reasonably clean, as they will "roost" on the floor.

Water should be where they can get at it day or night for drinking. They need plenty of water inside, but for practical management the less they have to dabble and play in the better, as it uses up their fattening energies and makes extra work in tending, as they will be sure to slop water over the floor and get it unfit for their own use.

FEEDING—The Duck has no crop, hence cannot stand much hard grain, but should be given mash feed. Ducks are heavy eaters, can be crowded for market, but of course there is a limit. Feed all they will eat up clean. Never leave stale food around to become filthy and fermented and thus a source of disease. In a state of nature they would naturally feed on watergrass and roots and low forms of animal life. Always give them some green food unless they are on range. Feed about as follows:

As with chickens, do not attempt to feed the new hatch before 36 or even 48 hours, but let the little birds fully absorb the yolk. Then give two-thirds part wheat bran to one-third part cornmeal, moistening to a crumbly mass with a little water or milk. Mix in one raw egg with each quart, and also mix in a little sand or fine grit. Keep this before them for 48 hours, watching to see that it does not get stale, that is, renewing as necessary. Give them clean water to drink in a fountain such that they can wet their bills and heads but can't get their bodies in the drinking water.

At one week: Give three parts wheat bran, two parts cornmeal, with about five percent of beef scrap. Keep changing above so as to have equal parts wheat bran and cornmeal at six weeks, with about fifteen per cent beef scrap. With this feeding the ducks will be ready for market at ten weeks. Watch the beef scrap and reduce the amount if the bowels seem affected. They certainly like green feed, but much will tend to make the skin yellow, and the market demands white. Wheat is fine for giving this white skin and beside it makes good strong bones.

The feeding trough should be plenty long so all can feed at once. Feed just as much as they will eat up clean in 15 or 20 minutes is a good practical rule to follow. Let us repeat again, never leave food around in trough or yard to become foul and cause disease.

Breeding stock are best given free range during the day, starting them out after a scant breakfast so that they will be sure to exercise well in foraging. For this morning feed give largely bran with a little cornmeal. Feed about the same at evening. A good formula is as follows: Three parts wheat bran, one part low grade flour, one part cornmeal. Add about five per cent beef scrap, three per cent grit. Provide them with finely shredded corn fodder, or clover or oat fodder.

Laying stock will make good returns on the following ration: Equal parts cornmeal, wheat bran and low grade flour. To this add one-fourth the bulk of cooked vegetables such as potatoes, turnips, etc. Mix in beef scrap, about twelve per cent. Mix with a little cold water to a crumbly feed. Another laying ration is as follows: Three parts cornmeal, two parts wheat bran, one part red dog or other low grade flour, one part cut alfalfa clover or cut vegetables, one part beef scrap. Mix to a crumbly mass with milk or cold water. Either of these can be used twice a day with a lunch feed of a little corn, wheat and oats at noon. Of course, keep grit and ground oyster shell before them all the time. Also plenty of water, as ducks wash down their food with water.

Usually the flocks are brought in from range the last of November or

early in December, then put on laying ration and commence egg production in about three weeks after housing. As would be expected, the first eggs are more liable to be infertile. For hatching, the eggs should not be trusted to the ducks, as they are inclined to be unreliable. Where most convenient hens can be used for hatching and brooding, but on a large scale the best way of course is to use incubators and brooders. Eggs will require 28 days for hatching.

GEESE

There are many places on the average farm that are not suitable for cultivation or for the raising of chickens, that could be profitably utilized for a goose pasture. Low, swampy places can be used provided there is also some high ground.

Goose culture requires less capital than any other branch of the poultry business, as very little housing is necessary and they are turned onto the land very much like cattle. A rough shelter free from extreme drafts should be provided and a deep litter kept on the ground inside. The quarters should be kept reasonably clean, for although they will stand more filth and neglect than chickens it is not the proper way to care for them and good results cannot be obtained without considering the health of the flock.

Mating usually takes place some time in February and after the fowls have been penned together for a week or ten days it is not necessary to keep the various pens separate. Once the family ties are firmly established they will be lived up to during the entire season. Two or three females are all that should be mated to a male.

Geese are long-lived and ten-year-old birds are quite common. Females of three years or over are the best for breeding purposes and their usefulness continues throughout their entire life. Young ganders are more desirable for breeders because of their activity. Old ganders also get quarrelsome with age.

There is a difference of opinion as to which is the best breed of geese, but the Toulouse, Embden and African are the most popular for general purposes.

A goose will lay from twelve to twenty eggs before becoming broody, but twelve is about the right number for a setting for the best results. Twenty-eight days are necessary for incubation.

If goslings are well hatched little difficulty will be experienced in raising them. They can be given about the same feed as little chicks, with the exception that green food such as fine cut grass or vegetable matter should be given several times a day after the first day.

The old goose should be kept in a coop and the goslings allowed to run about. After a month they can be let out to range and very little attention will be necessary. They are very light eaters and if the pasture is good only a little other food will be needed. A good mash feed for them is made by mixing two parts of bran with one of cornmeal. A variety of vegetables such as beets, potatoes, turnips, cabbage, etc., should be given them.

Illustration No. 21.

Toulouse Geese

Because of their rapid growth and the small quantity of grain they consume geese will be found one of the most profitable kind of stock that can be kept on the farm.

POULTRY DISEASES

The diseases of poultry are much the same as those of the human family. Not only that, but the causes are about the same. They can be traced to unsanitary conditions, improper feeding, impure drinking water, or exposure.

The continuous feeding of strong carbonaceous foods, or feeding too much of one kind of food, or a lack of animal food, or green foods in the winter, and then in the spring eating too heavily of grass, etc., all contribute to poultry disease. Impure water is also a frequent factor. To the above causes may often be traced Indigestion, Crop-bound and Cholera. If fowls are forced to roost in crowded quarters, they are chilled when they go out in the morning and colds ensue which, in turn, cause Roup, the scourge of the poultry yard. Another source of disease is lice—the greatest of all causes of trouble. They soon deplete the vitality of the fowls, making them susceptible to colds and other forms of disease. This is particularly noticeable at moulting time.

It would be folly for us to go on and tell you how to cure disease before stating that very much can be done in the way of prevention. It is so much easier to prevent than it is to cure that we call your attention to our article on NOX-I-CIDE, the foe of germ life, on page 71 of this book.

Diseases of the Respiratory Organs

ROUP

Nearly every poultryman has had experience with this most dreaded disease. The ravages of Roup often amount to an epidemic. In such cases it is often termed "Cholera" for, among the larger number of poultry raisers, any dangerous disease is called "Cholera" when, in truth, there is but one similarity between the two diseases which is that either is pretty sure to terminate fatally if left to itself. While Roup may occur at any season of the year, it is most common during the late fall months, early winter, and the frosty days of spring.

Illustration No. 20.
Fowl with Roup.

CAUSE—Roup generally gets its start with a cold which may be contracted in various ways, such as exposure to cold rains or disagreeable weather; by drafts of air blowing directly on the roosts; through improperly constructed or poorly maintained houses; or the evils of overcrowding. Where fowls or young chicks are allowed to overcrowd at night they become heated and then, when they go out in the chill of the morning, they catch a cold which soon develops into Roup. This disease is also hastened by accumulations of filth in and about the poultry houses, as this condition promotes all classes of disease. Lack of proper ventilation is another great cause of Roup. The foul

air cannot escape and the moisture from the breathing of the birds condenses on walls, etc., then freezes or "frosts" as already described.

According to scientific authorities, there are varied groups of diseases commonly known as Roup. It is very likely that Roup cannot originate from a cold without its specific germ being present. But for all practical purposes, and for all logical prevention, treatment and cure, they can be considered identical until such time as their development advances to a point where they may readily be identified by the ordinary poultryman.

Many people who have houses constructed on the most approved plans, and whose fowls are given the best possible attention, have trouble with Roup among their fowls and are unable to trace the cause.

Roup is one of the most infectious diseases and can be communicated in various ways. One of the most common is by new stock from infected yards, or by the use of some infected coop or utensil. It is frequently contracted in the show-room from other birds, or from infection clinging to appliances of various sorts.

When the infected matter from the diseased fowl dries, the germs may be carried and scattered by the wind and thus spread the disease. Poultrymen do not always think of this and are unable to understand its occurrence in their flock, or its transmission from one portion of the flock to another. Many times fowls will have the Roup without any indication of a preliminary cold. This is explained by the fact that Roup is a germ disease; these germs live on and within the mucous membrane of the throat and head passages; the infected fowls are continually throwing off these germs and, as they dry, they are carried in the air and may lodge in the nostrils when the fowl breathes, or they may lodge in the eye and multiply from that point, which explains the frequent watering of the eye and the absence of every other well-known symptom so common to this disease.

SYMPTOMS—Unless contracted from the dry germs in the air, as mentioned above, the first symptom is that of a slight cold, the bird sneezing, gasping, or wheezing, and repeatedly rubbing its head on its plumage. The fowl loses appetite and shows a disposition to keep away from its fellows. You will likely notice it moping in some dark corner with ruffled feathers. There is a watery discharge from the nostrils and the corners of the eyes, and soon the nostrils become closed. Development is more or less rapid. The upper parts of the mouth and throat may fill with a hard, cheesy matter of very offensive odor (the "roup smell"); the head and eyes are usually swollen, and the comb turns dark; there is high fever, the bird becomes emaciated and listless and in many instances, unconscious. Altogether the roup bird presents a most miserable appearance, and it is not long before it dies.

TREATMENT—The first thing to do is to separate the sick from the healthy fowls. The logical plan is to remove the healthy fowls as the old quarters have been contaminated to a greater or less extent. Inasmuch as this is usually impracticable, remove the sick birds to clean, dry quarters. The old quarters should then be thoroughly disinfected with a solution of CONKEY'S NOX-I-CIDE according to directions. Then, in all the drinking water, place CONKEY'S ROUP REMEDY for a week, excluding all other water. This should at once check the progress of the disease among the balance of the flock.

Roup is characterized by considerable fever which induces thirst and causes the bird to seek relief in excessive drinking. With CONKEY'S ROUP REMEDY in the drinking water as directed, the fowl takes its own medicine without any effort on your part. A measureful in the drinking

water and the fowls cure themselves. The measure referred to comes in the package and holds about as much as a lady's thimble.

If the disease has become so advanced that the fowls cannot see to drink, or the head passages so choked that the bird swallows with difficulty, you can use a warm solution of the remedy and duck the fowl's head beneath the surface for a moment. Its struggles to breathe will carry the fluid directly to the seat of the disease. Of course, take care not to strangle; and in cold weather do not attempt this operation unless you can properly care for the fowls afterwards in a warm room, to prevent catching cold.

CONKEY'S ROUP REMEDY is a carefully compounded preparation. Coming in contact with the membranes of the throat and mouth, the seat of the disease, it kills the germs which are so rapidly multiplying. It is quickly taken up by the system and being a strong tonic, builds up the system, and assists nature in every possible manner to throw off the disease.

Illustration
No. 21.

OUR GUARANTEE—So positive are we of the curative powers of this remedy that we sell it to you with the understanding that if it should fail to please you **YOUR MONEY WILL BE REFUNDED**. This will be done cheerfully! Any poultryman can tell you of our standing and ability to do just what we say.

WORTHLESS IMITATIONS—Every successful firm will have its "trailers" and we are no exception to this rule. There have sprung up, here and there, a number of imitators of Conkey's remedy. Not only have these people and firms tried to imitate the contents of our package, but have put their goods up in the same kind of boxes and have imitated our label until we have been compelled to change our label to the style of our illustration No. 21 on this page. They are not affecting our business to any extent, the name of CONKEY is too well established. We mention this for the purpose of protecting the beginner or the one who has not heretofore used our goods. When you order insist on CONKEY'S. If your dealer cannot supply you, send the order direct to us and you will receive the goods by return mail. (See CONKEY'S ROUP REMEDY, page 65.)

PREVENTION—Much can be done in the way of prevention. The frequent spraying of CONKEY'S NOX-I-CIDE in and around the houses, etc., and the washing of utensils with a solution of the NOX-I-CIDE will be found very beneficial. It will prevent other diseases as well. If at least once a week CONKEY'S ROUP REMEDY is placed in the drinking water according to the directions for prevention, it will be found valuable for warding off Roup in all its forms.

PRECAUTION—ROUP COMES SUDDENLY AND UNEXPECTEDLY AND DOES ITS DAMAGE QUICKLY. Do not wait until your flock is down, and then have to wait again until you can send and procure the remedy, but order CONKEY'S ROUP REMEDY now and have it right at hand. It is AN EXCELLENT INSURANCE against the ravages of the worst disease known to poultrymen. If at the first appearance of this disease the remedy can be given at once your fowls will be restored to health in short time and without spreading it to the others. There need be no cause for alarm if you are provided for the emergency. It is only when the disease becomes deep-seated, and your yards have become thoroughly infected, that there is great danger.

COLD AND ROUP IN TURKEYS AND CANKER IN PIGEONS

The most effective treatment of these ailments will be found in CONKEY'S ROUP REMEDY. No one who raises Turkeys or Pigeons can afford to be without it. See page 36 on Canker.

CATARRH

This is an aggravated form of cold—an inflammation of the mucous membrane. Some make quite a distinction, technically, between Catarrh and Roup, but we class them under the same heading. Certainly the method of treatment applies equally well to either. CONKEY'S ROUP REMEDY will do the work and do it quickly.

DIPHTHERIA OR DIPHTHERITIC ROUP

There is a great difference of opinion as to whether this disease is a result of Roup or of a specific germ of its own. We might enter into a lengthy discussion of this matter and give you the results of our most careful study and observation, but it would represent nothing of practical value to the poultryman, and this book is written for practical purposes only.

SYMPTOMS—This form of disease is marked by acute inflammation of the mucous membrane of the head passages, that is, the mouth, throat, nasal passages and eyes. The mouth and throat are covered with yellowish gray patches which form a coating so thick and of such strength, as to seem like a new membrane. The word Diphtheria means soft leather, and it is an excellent description of the false membrane appearing in this disease. When this matter is removed or torn away, a raw bleeding surface is left. While the germ is not the same, this disease resembles human diphtheria, and it is said, there have been instances of the contraction of a light form of diphtheria by children from fowls so suffering, and that fowls have been also known to have contracted human diphtheria. It will, therefore, be understood to be exceedingly contagious and dangerous. It not only attacks chickens, but Turkeys, Pigeons, Ducks, and many other fowls. Its early symptoms are the same as Catarrh and Roup.

TREATMENT—In very many cases of this nature, CONKEY'S ROUP REMEDY has been found most excellent. It is a very dangerous disease and its prevention should be sought by the liberal use of CONKEY'S NOX-I-CIDE. It may be used in the same manner as described for prevention of Roup.

PIP

Pip is a hardening of the mucous membrane of the mouth, particularly of the tip of the tongue. It is caused by constant forced breathing through the mouth through the presence of Roup, Cold, etc., which have closed the nasal passages. The only possible cure is by removing the cause—that is by treating as described for Roup or whatever disease causes it. **DO NOT REMOVE THE HARDENED TIP ON END OF TONGUE**—it is a part of the tongue. Apply daily to the hardened tip a little of CONKEY'S HEALING SALVE and give the ROUP REMEDY according to directions.

CANKER

This is an ulcerative catarrh of the mouth, which is often found in connection with a bad case of roup or chicken pox (sorehead). It is a common disease of pigeons, in some forms resembling Aspergillosis, described on page 51.

CAUSE—Neglected cold or roup; in pigeons a common cause is too constant feeding of corn, or use of dusty or musty grain or litter. See Aspergillosis, often taken for canker.

SYMPTOMS—Difficulty in swallowing, with attempts to swallow as though there were some grain or other substance lodged in the throat. The neck sometimes has the appearance of being stiff. White spots appear on the membrane of the mouth. In some cases there are cheesy growths about the mouth, side of tongue, base of bill, and at times this formation extends to the windpipe.

TREATMENT—When given according to directions, CONKEY'S ROUP REMEDY is the most valuable remedy known for this disease.

TUBERCULOSIS

Fortunately for the poultryman, this disease is not very common. Its symptoms are so much the same as those of Consumption, and the treatment is so nearly identical that we will treat them as one in this article.

SYMPTOMS—Lack of life, emaciation with indications of indigestion but there is in Tuberculosis a decided rise in temperature and, during the last stages, violent diarrhoea. It is not possible to outline the symptoms so surely that you can absolutely rely upon them in diagnosing the disease. It is a germ disease, and a bacteriologist only could give a definite opinion after examination, but this is not possible or practical for many poultrymen. A post mortem examination will usually reveal tubercles and nodules throughout the liver and covering many of the internal membranes. When, however, you find any of the fowls "going light," as it is called, that is showing rapid and extreme emaciation, with the above symptoms, take no chances, but kill them at once.

(As the majority of cases of Going Light result from Tuberculosis, we have used the term in this connection, but there are also cases of Going Light from other causes. Sometimes fowls with voracious appetites will go light through a specific germ for which no remedy is known and others will go light from indigestion which is not difficult of treatment, and such cases without evidence of other symptoms, can be treated as for Indigestion.)

CAUSE—As stated before, Tuberculosis is a germ disease and is highly contagious. It is usually communicated through contact with birds which have it. Some maintain that it can be contracted from human beings, or from cattle that are suffering from Tuberculosis. In any event it is best to provide against such a possibility. There is no question but that strong, vigorous stock are seldom troubled with it, and that maintaining a high standard of health is the best known safeguard.

TREATMENT—Kill all which show any symptoms and burn and bury the ashes. Remove the balance of the flock to new quarters and, with a sprayer or sprinkling can, disinfect everything that the fowls have come in contact with, using a solution of CONKEY'S NOX-I-CIDE, two parts NOX-I-CIDE to one hundred of water. Go over houses, runs, roosts, utensils, EVERYTHING, once a day for a while. Fowls can then go back to old quarters. CONKEY'S POULTRY TONIC should be given in their daily mash. If this were given occasionally as a tonic, there would be but little cause for alarm over this trouble.

INFLUENZA

Influenza, "Epizootic," or Grippe is a contagious, catarrhal disease distinct from Roup, although it often appears with Roup. Its common form is like a Rousy cold and has the Rousy smell, with or without Diarrhoea. It may well be classed as Roup for all practical purposes, as the cause, symptoms, and treatment are the same.

SWELLED HEAD

Swelled Head is generally an after-effect of Roup and its kindred diseases; but fowls may be found with hot and swollen heads without having had any severe case of Roup or Cold.

SYMPTOMS—Swelling of head with more or less closing of eyes, etc.

TREATMENT—Same as for Roup. Sometimes it may be necessary to lance in order to remove the pus, while hot applications of one measureful of Roup Remedy to one quart of water will help to clear away the pus.

In any case of Roup and the diseases that may be classed with it, there is a liability of the fowl dying from starvation when the disease advances to a point where it is difficult for the bird to swallow. A good, strong beef broth will often tempt an affected fowl, but, if not, make it take several teaspoonfuls three times a day, and it will be found so strengthening that it will often save a valuable bird when other food entirely fails.

BRONCHITIS

Bronchitis is caused by a cold, by sudden changes in temperature, by damp quarters, etc., and is often mistaken for Roup. It is also frequently caused by breathing particles of dust, lime, or other foreign substance. Unlike Roup, Bronchitis is an inflammation of the membranes of the bronchial tubes, instead of the nostril and head passages. Filthy quarters and the breathing of foul air should be especially avoided in such cases.

SYMPTOMS—Loss of appetite, and quick breathing and coughing. A peculiar whistling sound may accompany the breathing, which changes to a decided rattling in later stages. Bronchitis should not be confounded with Roup, which is indicated by running at the eyes, nose, etc. The two diseases require entirely distinct remedies and treatment.

TREATMENT—Give CONKEY'S BRONCHITIS REMEDY according to directions and as early as possible.

CONGESTION OF THE LUNGS

This is caused by the sudden chilling of the surface of the fowls' bodies and is due to exposure of various kinds. It is more frequently found in brooder chicks and fowls in run-down condition, when their strength is not up to standard and their bodies are not in condition to protect them from the cold.

SYMPTOMS—Stupor and lack of life, accompanied by difficult and rapid breathing. The comb may turn dark and blood-tinged mucus may be discharged from the mouth. The disease appears without much warning and may quickly cause death.

TREATMENT—Owing to the fact that this disease is so quickly fatal, there is nothing that can be done to cure it. The prevention should be given all your thought. See that all fowls, and especially moulting fowls,

are given dry, warm quarters and provided with plenty of food, properly proportioned. Moulting fowls should have all the animal food that they will eat. CONKEY'S POULTRY TONIC in the mash will be found of great value as a preventive.

PNEUMONIA

This may result from Congestion of the Lungs and should be treated in the same manner.

GAPES

Perhaps no subject among the diseases of poultry has excited more interest or caused more argument than Gapes. It is one of the most common diseases, though it has baffled the best treatment for years. This was because the ailment was not thoroughly understood and, again, because the trouble was in the windpipe—a difficult place to reach with ordinary remedies. It was not until very lately that an effective remedy was found.

Illustration No. 22.
Chicken with Gapes.

a parasite of the common earth worm and these earth worms, in an affected area, carry the embryos in their bodies. The best way is for the poultryman to keep all little chicks off such "gapy ground."

CAUSE—The Gape Worm (*Syngamus Trachealis*) a parasite affecting poultry, usually confines itself to young chicks. The chick acquires the gape worm either through infected drinking water, or from eating angle worms, or from picking gape worms from the ground, etc., where other chicks have coughed them up. Gape worms are, originally,

Illustration
No. 23.
Trachea showing
Gape Worm.

During the time that the gape worms are drawing their sustenance from the chick, the chick itself is losing its vitality and strength, just at the time when this is most needed to produce a strong, healthy fowl. If the gape worms gather to any great extent in the windpipe as they mature, the windpipe becomes filled with their bodies and the chick chokes to death. Of course, many chicks have the Gapes and do not die, but this is probably due more to the lack of number of worms than to anything else. Gape Worms do not multiply in the windpipe as the eggs, or embryos, go to the ground before hatching, and it is only the acquired worms that bother the chicks.

SYMPTOMS—This disease first shows as a slight cough; then, as the irritation becomes more acute, and the worms grow larger, it causes the gaping which gives the disease its name. This is usually accompanied by more or less sneezing, difficulty in swallowing, breathing, etc. Inasmuch as the symptoms of this disease are very much like those of Bronchitis and Pneumonia, you should be absolutely certain of the presence of Gapes before start-

ing to treat the fowls. This is best learned by examining the dead birds. After opening the windpipe with a sharp knife, cutting lengthwise, examine its lining and see if you can detect any worms there. A magnifying glass will be found helpful. In little chicks, the diagnosis is not usually difficult, as the constant gaping is almost a sure indication, but older fowls may gape because of some obstruction or from various other causes. Besides this, in Pneumonia or Bronchitis there is a rise in temperature, which is not true of Gapes in its earlier stages.

TREATMENT—We advise that the chicks be removed to new ground, where absolute cleanliness, both of quarters and utensils for drinking and feeding, can be looked after. Do not feed on the ground, but on boards or in shallow dishes, and thoroughly scald these after each feeding. Keep the quarters fully disinfected with CONKEY'S NOX-I-CIDE. If you cannot move your chicks to new ground, make a flooring of matched boards surrounded by wire netting. Place sand, or clean dry earth, on this and proceed as above, changing the soil on the boards once or twice a week. In treating for Gapes, do not become impatient. This disease requires considerable time to wipe it out, and it may be quite a while before you can note any improvement. The chief thing is to keep up the strength of the chick and bring the bird past the danger period while working for the cure. Keep in mind that the very nature of the disease makes it slow to yield. CONKEY'S GAPE REMEDY will prove itself satisfactory, if instructions are persistently followed.

Along with this treatment other things should be done. As stated above, the disease is introduced by the earth worm. As the irritation becomes intense the fowls cough up the worms and these are eagerly picked up by others of the flock, or the contamination is left on the ground and is mixed with the soil, or is distributed over the drinking vessels, feed troughs, or other utensils, where it is sure to cause infection again. You may cure the Gapes as it stands, but if you do not wipe out the cause, it will bother you right along and maybe destroy some future hatch. For these reasons, the most stringent measures must be taken to kill it root and branch. CONKEY'S NOX-I-CIDE, one part NOX-I-CIDE to 50 parts of water, should be sprayed or sprinkled thoroughly over the premises where there may be possibility of contamination. All utensils should be washed with the solution and the houses, pens, coops, etc., should be carefully sprayed or sprinkled with it. In very severe cases, where the disease is of long standing, it may be necessary to move your fowls to another section of ground and not to use the old quarters for a year or two. The ground then should first be well sprinkled with NOX-I-CIDE, 1 part NOX-I-CIDE to 2 of water, and then plowed in and sowed to some regular crop. If, however, as soon as you discover the disease among your fowls, you will separate the sick birds and follow closely the treatment we have advised, you should be able to remedy the trouble. CONKEY'S GAPE REMEDY, like all of CONKEY'S POULTRY REMEDIES, is a practical article, carefully compounded, and can be relied upon.

Diseases of the Digestive Organs

CHOLERA

Genuine Cholera is a disease but little known and as little understood. The poultryman calls all diseases of the digestive tract "Cholera." He is wrong, but the name has become so common that Bowel Trouble, Indigestion,

Diarrhoea, Dysentery, etc., commonly come under that head and we follow the custom so as to be understood. True Cholera is so swift and fatal in its results and so contagious, that there could be no mistaking it. Genuine Asiatic Cholera is seldom, if ever, seen in this country, and our meaning for "Cholera" is the many diseases that resemble it and are so termed by common usage.

CAUSE—The cause of Cholera can usually be traced to filthy quarters or to the drinking of stagnant water. It is frequently brought to a flock by the introduction of some diseased fowl, or contaminated coop, or utensil, from a yard infected with Cholera. Improper feeding, like soured and sloppy mash, often causes forms of Cholera. The feeding of too much of one kind of food, or the lack of some kind of food needed, frequently causes diseases of the digestive tract, as already warned in the matter of green bone, oil meals, green food, etc.

SYMPTOMS—A slight, watery diarrhoea is usually the first indication. The bird shows a lack of life and spirit, and goes moping around half asleep with ruffled feathers. The urates, which is that part of the excrement thrown off by the kidneys, and which in healthy fowls is white in color, takes on a bright yellow tinge or, again, it may turn green. This is not, however, a sure indication of Cholera, for the same symptom is noticeable in other diseases as well. The droppings become bloody as the result of intense inflammation; the comb darkens; frequently it turns black and the decline is rapid—the bird possibly being sick but a few hours—though the length of time varies. It attacks all kinds of domestic fowls and carries with it a high fever, while birds become exceedingly weak and may topple over at the slightest touch.

TREATMENT—The most important aid in the treatment of this disease is a proper disinfectant which should be used freely and regularly. CONKEY'S NOX-I-CIDE cannot be surpassed for this purpose. One gallon of NOX-I-CIDE, when properly mixed with water, will make 101 gallons of ready-to-use disinfectant. This solution can be placed in a sprinkling can and the premises gone over by sprinkling, or it can be sprayed through a regular sprayer.

As soon as any birds show an indication of this trouble they should be isolated from the others. Both the old and new quarters should be disinfected carefully as above described. CONKEY'S CHOLERA REMEDY should be placed in the drinking water and all other water must be excluded. The fever of the disease will make the fowls drink eagerly and they will take their own medicine. This will at once check the internal inflammation, kill all the germs with which it comes in contact, and assist nature in throwing off the disease. CONKEY'S CHOLERA REMEDY should also be given to all birds which may possibly have come in contact with the disease, and they should be deprived of all water except that in which the remedy has been placed, for at least a week. As soon as any fowl dies it should be burned and the ashes and remains buried at a distance from the poultry yards. The drinking water should be frequently changed, and thorough disinfection should be kept up each day and for some time after all traces of the disease have disappeared.

PREVENTION—Very much can be done in the way of the prevention of this disease; in fact, this is by far the most satisfactory and sure method, for if once allowed to get into a flock, it is bound to cause considerable loss before it can be checked. Great care should be exercised in introducing new fowls. They should be quarantined for a week or two until you are

satisfied that they have no disease germs to communicate. CONKEY'S NOX-I-CIDE should be used freely about the quarters at all times.

Illustration No. 25.

Digestive Organs of the Chicken.

In illustration No. 25 the upper part of the head has been removed, leaving the lower jaw, and that is turned sideways to show the tongue and openings to the trachea and oesophagus. All the neck, with the exception of the oesophagus, the breast bone, the heart, and the superficial muscles, have also been removed.

1, tongue; 2, pharynx, showing opening to larynx; 3, upper portion of oesophagus; 4, crop; 5, lower portion of oesophagus; 6, succentric ventricle; 7, gizzard; 8, origin of the duodenum; 9, first branch of duodenal flexure; 10, second branch of same; 11, origin of the floating portion of small intestine; 12, small intestine; 13, free extremities of the cæca; 14, insertion of these two organs into the intestinal tube; 15, rectum; 16, cloaca; 17, anus; 18, mesentery; 19, left lobe of the liver; 20, right lobe; 21, gall bladder; 22, insertion of the pancreatic and biliary ducts; 23, pancreas; 24, lung; 25, ovary; 26, oviduct.

INDIGESTION, BOWEL TROUBLE, DIARRHOEA, DYSENTERY, ETC.

These disorders are usually termed "Cholera," but, fortunately for the poultryman, they are of a far less serious nature and readily yield to treatment if taken in time. It is of the utmost importance that these troubles be promptly and properly attended to for, if they are allowed to run, they are generally fatal and carry off a large number of the flock.

These diseases of the digestive organs are especially noticeable in little chicks and are particularly prevalent during warm weather. They are also evident in fowls of all ages and are one of the greatest drawbacks to the successful raising of poultry.

CAUSE—Most of these troubles can be traced right back to improper feeding. Too much carbonaceous food is given, or the diet is held too strictly to one thing, or to one class of food. Often it is due to a lack of grit. Many people try to get along without this vital necessity. Grit, first, last, and all the time, is a wise motto to live up to. Again, these troubles are

caused by the fowls eating sour or decayed food, which they pick up for themselves. This may be as good a place as another to speak about sour food.

SOUR MILK IS EXCELLENT FOR FOWLS BECAUSE THE SOURNESS IS DUE TO THE PRESENCE OF LACTIC ACID, WHICH IS NOT ONLY GOOD FOR FOWLS, BUT FOR HUMAN BEINGS ALSO. BUT A MASH WHICH HAS TURNED SOUR IS ENTIRELY ANOTHER MATTER, AS ITS SOURNESS IS DUE TO PUTRIFACTION AND IS DEATH TO ALMOST ANY ANIMAL OTHER THAN A HOG. It is not even good for hogs! Little points of general information like the foregoing, spell success for the poultryman and farmer and lead to the goal of profit and satisfaction.

All feed should be of good quality, properly balanced.

A common cause is found in the close confinement and lack of green food in winter, and the consequent over-eating of grass, etc., when fowls are turned loose in the spring. They should be fed green food freely during the winter months. See page 19.

Drinking water that is impure or stagnant is a common cause of digestive troubles. A good supply of fresh drinking water should be kept in suitable vessels before the fowls at all times. This water should be changed frequently,—in summer to keep it cool and in winter to prevent freezing. Place it so as to keep out filth, and in the shade.

Sanitary quarters will help to prevent this, and also many other troubles. **CONKEY'S NOX-I-CIDE** should be sprayed about the buildings, runs, yards, etc., frequently, and should be used for disinfecting the drinking vessels and feeding utensils.

If birds are exposed to dampness, or are permitted to live in cold, damp quarters, they are almost sure to have bowel trouble.

TREATMENT—Keep all water from the fowls except that in which **CONKEY'S CHOLERA REMEDY** has been placed. Discontinue heavy mashes and provide only a limited amount of clean, pure food. If too much carbonaceous food has been given, see that a balanced ration takes its place. Sick birds should be placed in dry, comfortable quarters, plenty of grit should be provided, and birds should be free from lice, and kept free by the use of **CONKEY'S LICE PREPARATIONS**. A large proportion of the diseases of fowls is caused by these pests, and no bird can throw off disease if its vitality is being sapped by parasites. The premises, including houses, utensils, runs, etc., should be thoroughly disinfected with **CONKEY'S NOX-I-CIDE**, one part **NOX-I-CIDE** to 100 parts of water. Fowls that die should be completely burned, or saturated with a strong solution of **NOX-I-CIDE**, and buried.

WHITE DIARRHOEA (Tiphitis Coccidiosa)

There are various theories as to what this disease really is. A new theory is that it is a bacillary disease due to a parasitic organism very much like the typhoid fever bacillus. The commonly accepted belief is that it is a germ disease which attacks the caeca or blind intestine. A post mortem examination will always reveal the presence of *Coccidium tenellum*, a parasite belonging to the Sporozoa of the division Protozoa, the lowest division of animal life. This same germ attacks turkeys, ducks and pigeons. When this disease prevails it usually kills a large percentage, sometimes destroying an entire hatch. It is accompanied by a white, pasty, fecal discharge, which pastes up the feathers and closes the vent. There is also a disease which is a contraction of the vent which comes with or without White Diarrhoea, and is always fatal.

CAUSE—The presence of the germ (or bacillus) as above. While this

disease may readily be transmitted from the droppings of affected fowls, the primary cause must be sought back to the eggs used for hatching.

PREVENTION—Hatching eggs should always be antiseptically cleaned by wiping in 95% alcohol. (Or use 3% NOX-I-CIDE solution as described page 68.) If an incubator is used, it should be washed with a solution of CONKEY'S NOX-I-CIDE, 1 part to 40 of water, and exposed to the sun. The egg tray should be scalded and washed with the same solution and, if there is burlap in the nursery or elsewhere, it should be renewed. The same precautions should be taken with the brooders. The soil to which the chicks have access should be well disinfected with NOX-I-CIDE solution, dug up often, and exposed to the purifying effect of sun and air.

If a hen is used for hatching, give her CONKEY'S WHITE DIARRHOEA REMEDY as a preventive of the chicks contracting it from her through her droppings. Also, give it to laying hens, as the germ coccidea has been found in the white of the egg and in the shell, which has been taken up in the passage of the egg through the cloaca of the hen. This, of course, applies to poultry yards where the disease may have been more or less prevalent.

While we do not agree with some that the cause of White Diarrhoea is wholly from the unabsorbed yolk in the digestive tract of the chick, we do most strongly advise that little chicks be not fed for the first 48 hours after hatching. This gives the yolk time to be fully absorbed and saves the chick from what would be another favoring condition for White Diarrhoea.

TREATMENT—Give CONKEY'S WHITE DIARRHOEA REMEDY according to directions in the drinking water. This treatment is effective and very easy.

CONSTIPATION

This is caused by a lack of exercise and proper food, or by worms; and in the case of chicks a common cause is obstruction of the vent. Often chicks are given too much cornmeal and other heavy food and not enough green food and bulky material. Enlarge the runs if possible; give an increased amount of bran in the mash, also putting in the mash a large percentage of cut alfalfa or cut clover, and give them the sweepings from the hay mow to pick over. For medicine give CONKEY'S POULTRY LAXATIVE, either as a laxative, or as a cathartic dose as needed, according to directions.

CROP BOUND

This trouble is usually caused by improper feeding. Too much grain in the crop will distend it and impair its functions. It may be the result of the fowl eating a mass of dry grass, or wire grass, or indigestible chaff, etc., which forms into a hard ball and cannot pass beyond the crop. The contents of the crop ferment and the bird is liable to starve with its crop full.

SYMPTOMS—The symptoms are usually easy to discover as the crop is hard and greatly distended. In some cases, an ill smelling liquid will run from mouth and nostrils. The comb is pale, the beak is open as the pressure on the trachea makes it difficult to breathe, its feathers are ruffled, and the bird has a general appearance of dejection.

TREATMENT—Pour a little sweet oil into the fowl's mouth and force it to swallow. Grasp the legs with one hand and, with the other, beginning

at the top of the crop, gently press and work the contents of the crop, and endeavor to loosen up a small quantity of the matter that may thus be set free. Supply oil often while working, so that the contents of the crop may be kept as moist as possible. As soon as the crop is emptied, put $\frac{1}{4}$ teaspoonful of baking soda in a quart of water and keep it before the fowl. Do not feed anything for a day and then very sparingly and carefully of soft foods until recovery.

Where the above process proves ineffectual, more heroic measures must be taken. Prepare a solution of five drops of carbolic acid to an ounce of water, or, if you have it, CONKEY'S NOX-I-CIDE instead of carbolic acid, as this is safer. After picking the feathers, or clipping them with scissors, from a point near the top of the crop, leaving the skin bare, make an incision an inch long (no longer) lengthwise of the neck and cutting through the outer skin. Now press this skin to one side so that when it is released the next incision will not be directly behind it, and make a half inch opening rather high up in the crop, so that the food will not press it open when healing, as it would tend to do at the lower part. If the mass inside is hard and compact it may be necessary to cut into it with scissors. Your hands, and all tools and instruments used, should be dipped into the disinfecting solution of NOX-I-CIDE or carbolic acid. You may use tweezers, toothpicks, or anything with which you can carefully loosen the contents of the crop, and you must be careful that no portion of the crop's contents finds its way between the crop and the skin. Do not try to hurry, but patiently take everything out of the crop, inserting the little finger to feel that the lower opening to the gizzard is not obstructed. The wound should be washed with the solution and both incisions should be sewed with white silk that has also been dipped in the solution. Now take two single stitches in the cut in the crop, leaving ends long enough to hang out of the wound an inch. Then take three stitches in the skin, being careful not to include the crop in tying the knot. After five or six days cut the stitches and carefully draw them out. This operation is not serious and the bird is soon well.

Feed the bird nothing for at least twenty-four hours; then give small quantities of milk for two or three days. Mashies can be given after four or five days for a time and then give regular foods. It would also be well to put a few drops of CONKEY'S NOX-I-CIDE into each quart of drinking water, as this will prevent infection. CONKEY'S POULTRY TONIC, according to directions, will be found excellent in restoring strength to the fowl after mash feeding is commenced.

GOING LIGHT (ASTHENIA)

Going Light is a baffling ailment. It gets its name from the rapid loss of flesh. Sometimes it is a germ disease of the small intestines. Sometimes it is due to unsanitary quarters, lack of sunshine, etc. Mites or lice may cause it; or indigestion from improper feeding, etc.

SYMPTOMS—Combs and wattles turn pale; voracious appetite; loss of flesh; and slight constipation.

TREATMENT—First make a most thorough disinfection of the premises and all utensils, such as founts, troughs, coops, and houses. The first remedy indicated is a disinfection of the intestinal tracts, for which give CONKEY'S CHOLERA REMEDY as directed, or a little of CONKEY'S NOX-I-CIDE in the drinking water—not so strong that they will not drink it, 15 drops to a gallon of water is about right. Then give CONKEY'S POULTRY TONIC according to directions to build up the system and restore the strength.

Leghorn chicks frequently go light from a too rapid growth of wing feathers, which should be clipped so as to stop the drain on the body. Young pigeons may go light from rapid growth of tail feathers and these should be plucked out with a quick jerk for the same reason.

Going Light is often not so much of a disease in itself as it is a symptom of some other disease such as Tuberculosis, Infectious Leukaemia, Aspergillosis, Mould, or any disease where the blood becomes impoverished.

CATARRH OF THE CROP

This is an inflammation of the membranes of the crop caused by over-eating due to irregular or careless feeding, by eating foreign and irritating substances, by worms which collect in the crop, or by eating poisonous substances.

SYMPTOMS—Loss of appetite and debility. Fowls try to eject the contents of the crop and may belch as would a human being with indigestion. The crop is distended and feels soft, being filled with foul gas or liquid.

TREATMENT—Hold the fowl head down and press the contents of the crop gently out of the mouth. Dissolve one grain of salicylic acid in an ounce of water and give three teaspoonfuls at once. Do not give any food for from 20 to 24 hours; then give small quantities of simple, easily digested food, in which has been mixed CONKEY'S POULTRY TONIC according to directions. To prevent such troubles do not over-feed, and feed regularly. Mashies should be in such quantity as will all be eaten up in fifteen to twenty minutes. Grains should be given in litter to make the fowls work.

GASTRITIS

This is inflammation of the stomach which lies between the crop and the gizzard, due to eating mouldy or poisonous substances, to the feeding of foreign and indigestible matter, or to constant over-feeding, or to lack of grit.

SYMPTOMS—Inflammation of the crop, or intermittent diarrhoea and constipation. There is a loss of appetite and general debility, together with increased temperature.

TREATMENT—Give birds more range and a change in diet. Give boiled rice water to drink. Add $\frac{1}{4}$ teaspoonful baking soda to each quart of drinking water. If birds are constipated, give CONKEY'S POULTRY LAXATIVE according to directions, continuing if necessary. Under-feed, giving crumbly soft mashies mixed with water that has been poured hot over clover. Also give some meat food.

OBSTRUCTION IN THE THROAT

A fowl will sometimes attempt to swallow a piece of food which, because of its shape or size, will lodge in the throat. Unless removed at once, inflammation and consequent swelling will result and without immediate relief death will follow.

SYMPTOMS—Frequent attempts to swallow, and often a hard substance can be felt from the outside.

TREATMENT—Give a small quantity of sweet oil and work the substance out at the mouth by easy pressure and movement.

BAGGING DOWN

This is caused by feeding too freely of corn and other carbonaceous foods, and results in irritation, inflammation, and loss of feathers, of the posterior part of the body, by its hanging down.

TREATMENT—Change the diet, giving feeds containing largely protein, supply liberal quantities of green foods, and make fowls scratch for all grains in deep litter, thus compelling exercise.

DISEASES OF THE LIVER

Illustration No. 26.
Diseased Liver.

The liver in fowls, as in human beings, is one of the largest organs of the body and one of the most important. It prepares the bile which plays such an important part in digestion and it has much to do with the chemical changes in the blood. The principal diseases are Congestion of the Liver—Inflammation of the Liver, called Hepatitis—Atrophy, or wasting of the Liver—and Fatty Degeneration of the Liver. For our purpose, all of these may be classed under the head of liver troubles, as many of the symptoms are practically identical and the method of treatment is very much the same.

CAUSE—The main cause of Liver Trouble is found in the lack of exercise and improper feeding. Foods which are too

rich, or too heavy in their proportions of starch and fat-producing elements, may have been fed. This is frequently occasioned by the scraps from the table and kitchen which contain so much bread, potatoes, etc. If scraps are fed, and they can be used to great advantage, they should be perfectly mixed with other foods, so that the whole presents a balanced ration.

These troubles are also caused by the presence of parasites in the liver, those characterizing Chicken Cholera, Tuberculosis, and Blackhead (the latter is found in Turkeys) being the most common. These cause various derangements—inflammation, and finally death of the tissues.

SYMPTOMS—The great trouble in overcoming Liver Troubles is that the symptoms are often misleading and are slow to appear, the result being that when they are discovered it is often too late to apply an effective remedy. The Fancier, or careful poultryman, who watches his flock closely, is able to detect these symptoms, but with the ordinary market poultryman, the disease is liable to be well advanced before the need of a remedy becomes apparent.

The comb and wattles usually show a lack of color, gradually changing to dark red or purple; there is a loss of appetite and the bird is sluggish. In Jaundice the skin takes on a yellowish hue, and this is also indicated in the comb and wattles. The disease is commonly attended by a diarrhoea watery

and dark in color, and gradually changing to a yellow cast. There is much loss in weight and the bird becomes poor.

TREATMENT—Give free and open range if possible and see that birds have plenty of exercise. Give as a purgative one rounded teaspoonful of CONKEY'S POULTRY LAXATIVE to each two quarts of mash feed for two days, then discontinue for two days and repeat. If this remedy cannot be given in the feed, mix the LAXATIVE with a little sugar syrup and roll into pills, giving each fowl one the first day and repeat the second day if necessary. Change the diet, providing a supply of clover, or other green food, especially in the mash. Discard cornmeal, bread, potatoes, and all starchy foods as much as possible, and substitute foods which are high in protein, such as wheat, ground peas, oats, etc. Raw beef or green cut bone will be found very beneficial. CONKEY'S POULTRY TONIC given according to directions will be found excellent for bringing the birds back to proper condition.

BLACKHEAD

(Infectious Entero-Hepatitis.)

This is a parasitic disease which attacks the cæca, sympathetically affects the liver and is confined principally to turkeys. The Cæca is a sort of blind double-intestine and, much like the vermiform appendix in human beings. Its use is not fully understood. We do know, however, from dissection, its exact form in both normal and diseased condition.

Cæca of
Healthy
Turkey.

Cæca of
Diseased
Turkey.

Illustration No. 23.

CAUSE—The disease is caused by a parasite (*Amœba meleagridis*) which is taken into the digestive system with the food or drink. It attacks the mucous membrane of the cæca and brings on intense inflammation. The micro-parasites find their way from the diseased cæca into the liver, which brings this disease under the head of Liver Trouble.

SYMPTOMS—General Weakness, loss of appetite, and an almost constant diarrhoea. As the disease progresses, the head becomes discolored, turning quite dark, which gives the disease its name.

TREATMENT—This must be largely preventive. CONKEY'S POULTRY TONIC in the mash food, and CONKEY'S CHOLERA REMEDY in the drinking water, have been found effective. We have, however, a special BLACKHEAD REMEDY. While we do not guarantee this remedy to cure all cases, it has proven so thoroughly efficacious in so many instances, that we feel compelled to put it on the market for those who wish to take advantage of it. (See Special Remedies, page 68.

Where the disease has reached its height heroic measures must be adopted. Remove all affected birds and disinfect the premises, utensils, houses, etc., with CONKEY'S NOX-I-CIDE. Give the preventives to those not attacked and give CONKEY'S SPECIAL BLACKHEAD REMEDY to the affected fowls which you have separated. Keep up constant disinfection.

The germs are thrown off from the bowels and, as the diarrhoea is severe, the danger of infection is very great.

Blackhead is one of the most fatal poultry diseases to attack a flock, (usually turkeys) and no one can guarantee a cure after the disease is once thoroughly established.

Diseases of the Urinary and Reproducing Organs

INFLAMMATION OF THE OVIDUCT

This is caused by fowls laying eggs too often or eggs too large. It is also caused by internal disorders of the oviduct, such as Egg Bound, breaking of the egg in the oviduct, etc. These last mentioned may be caused by an overplus of fat from improper methods of feeding.

SYMPTOMS—The fowl strains repeatedly as if attempting to lay and, if it does lay, the eggs may be spotted with blood. The straining often leads to ruptured blood vessels which cause death. The vent is inflamed, the temperature first increases, but later decreases as the fowl loses strength, and finally dies of exhaustion.

TREATMENT—The diet should contain a large share of green food, and all grains, or mashes, should be cooling. Do not give stimulating or condimental foods. The birds should be separated from the flock and be given a quiet place. A pinch of baking soda together with a dose of CONKEY'S POULTRY LAXATIVE, will be found helpful. If you think that the egg is lodged in the passage, insert an oiled finger and proceed as in Egg Bound, but every movement should be slow and patient, as the inflammation is intense. Dust out with CONKEY'S HEALING POWDER.

PROLAPSUS OF THE OVIDUCT

This is confined mostly to old hens, and is due to over-stimulating food, straining, especially when passing large eggs, and may also be due to constipation. It is frequently one of the results of Inflammation of the Oviduct.

SYMPTOMS—There is generally a protrusion from the vent of a dark-red or violet-colored mass, which becomes highly inflamed, and which is liable to invite Gangrene, in which case death is inevitable.

TREATMENT—Determine at once whether or not there is an egg in the passage. If so treat as for Egg Bound. If it is not due to this trouble, then bathe the parts in a weak solution of CONKEY'S NOX-I-CIDE and, when dry, apply CONKEY'S HEALING POWDER, and gently press the protrusion back into place. Then follow treatment as outlined for Inflammation of the Oviduct. In addition to this, give the fowl five drops of Fluid Extract of Ergot.

VENT GLEET

Cloacitis, or Vent Gleet, is a contagious catarrh of the cloaca, or lower portion of bowel and is usually transmitted from fowl to fowl in the act of copulation.

SYMPTOMS—It is first indicated by frequent passages of excrement, the bird often trying to pass matter when there is nothing there. The mem-

branes are red, dry and swollen. A thin, watery discharge appears, which becomes white later on and is very offensive.

TREATMENT—Separate the sick birds from balance of the flock. Make a warm solution of 1 teaspoonful of NOX-I-CIDE in 2 quarts of warm water, and for 15 or 20 minutes immerse the lower portion of the fowl's body, including the vent, in this solution. Dry and put in a warm room to prevent catching cold. Repeat each day if necessary, and apply CONKEY'S HEALING POWDER or CONKEY'S PAIN LOTION to the vent.

EGG BOUND

This is more likely to happen with older fowls, especially during the latter part of winter, and may be traced to over-fat condition.

SYMPTOMS—The symptoms are unmistakable as the bird becomes listless and makes frequent attempts to expel the egg. If the bird is examined, the egg may be felt as a hard substance.

TREATMENT—In ordinary cases, inject a small quantity of sweet oil into the vent and then, by gentle pressure, assist the passage of the egg. When this is accomplished, reduce the feed and give green food in abundance, withholding all carbohydrates or fat-producing foods. If this does not bring the desired result, and the egg is not ejected, immerse the posterior portion of the fowl in warm water for about half an hour. Inject oil as before and endeavor to assist the egg's movement by using a gentle pressure. If this fails, it is best to insert an oiled finger, breaking the egg, thus allowing its contents to escape, and then remove the particles of shell with the finger. If, during this treatment for Egg Bound, Fluid Extract of Ergot is given, five drops to a dose two or three times a day, it will be found helpful. If it happens that through the fowl's attempt to expel the egg, the oviduct is ruptured, and the egg breaks through into the abdominal cavity, it will lead to death. If this is found to be the case, by all means kill the fowl.

BLOODY EGGS

Sometimes there may be found clots of blood within an egg. These are due to internal hemorrhages and can usually be counteracted by feeding plenty of green food, and discontinuing condimental foods, and giving less animal food; the object being to allay inflammation which may have produced the hemorrhage.

EGGS WITHOUT SHELLS

These are usually accounted for by a lack of shell-making material in the ration of the fowls. They may also be traced to the inflammation of that part of the oviduct where the shell is formed. This trouble leads to more or less irritation and should be corrected at once. This can be done by providing plenty of crushed oyster shells, mortar, granulated or broken dry bone, wheat bran, etc. We do not advise the use of egg shells as this may lead to the egg-eating habit.

DOUBLE YOLKED EGGS

These are often found, and the egg containing double yolks is usually larger than the normal egg and, for this reason, may cause some difficulty. As a rule, there is no cause for concern. Eggs of this kind should not be incubated, as they will usually produce freaks.

DIMINUTIVE EGGS

An examination of these will usually show an absence of a yolk. The albuminous part of the egg is present, but irritation in the oviduct has interfered with the proper union of the yolk and albumen: The albuminous matter, reaching the shell-forming part of the organ, is provided with the proper covering and the incomplete egg is laid. When you discover a hen having this tendency, separate her from the others. As the trouble is due to inflammation of the oviduct, follow treatment suggested under that heading.

EGGS WITH ODORS

When such foods as onions, fish, and even garlic, are fed in small quantities, they may prove beneficial, but when layers have access to such strong foods they often taint the eggs. It is on the same principle that celery is used in fattening food for ducks, to give the flesh a celery flavor. Avoid such strong foods where you are producing eggs for special market.

TWO EGGS IN ONE

Hens will occasionally lay an egg which contains within itself another egg with its proper shell covering. The inner egg, however, usually corresponds with our description of diminutive eggs—that is it contains no yolk. The small egg is formed and an attempt is made to lay it. Instead of passing out, a counter movement forces it back into the oviduct, where it probably comes in contact with the albumen and yolk of another egg on its way to the uterus to be covered with a shell, and the double egg is expelled. This condition, if continuous, is abnormal, and is an indication of the fact that the fowls are being too much forced for egg production.

HOW TO PRODUCE EGGS

Hens for breeding, and fancy stock, should never be forced! Utility stock should be made to pay all that it can and pushed to the limit of healthful production. Is it not better to feed fowls for a maximum egg yield for two years and then replace them with new stock, rather than to feed them for four years for a continuous minimum egg yield?

Horses are fed to draw the heaviest loads; cows are fed to give the most milk, so why not feed your fowls to produce the greatest profit? Some people say, "Why, it is not natural!" Neither is laying more than twelve eggs a year natural, and it is most decidedly unnatural for a hen to lay an egg in cold weather! Stick to nature and you will go bankrupt in the poultry raising business!

It has taken years of careful study and experiment to perfect CONKEY'S LAYING TONIC, an article that does not injure the hen, but which does tone and invigorate, improving the digestive system, strengthening the egg-producing organs and in general putting the fowl in that constitutional condition which is the secret of spring and summer laying. Most fowls need a tonic right after the molt. Often they do not fully recover condition before the coming of winter. The system is low, the circulation sluggish, in fact, all conditions exactly opposite to summer vigor!

CONKEY'S LAYING TONIC insures perfect digestion and tones the egg-producing organs. By keeping the health at the maximum point it prepares the proteids for egg production and invites summer activity in the winter season. It assists in the maintenance of heat without fat, thereby inducing egg laying by natural methods and without forcing. It assimilates the carbohydrates—the heating foods—with the rich blood that serves to convey the protein, thereby overcoming the greatest problem against nature—

the problem of furnishing winter heat without winter sluggishness. All this is the secret of winter eggs,, and it is worth finding out. See CONKEY'S LAYING TONIC, page 70.

POISONING

Through careless distribution of insect killers, salt brine, salt meat, lye, fertilizers, copperas, phosphorus from matches, rough on rats, paint left in old cans, Paris green, etc., many fowls meet death annually. It is necessary to use the utmost precaution to prevent fowls from obtaining access to them.

SYMPTOMS—Trembling, convulsions, and drowsiness. The fowls seek a dark place and draw their heads into the body. As a rule, the cause of the trouble is discovered too late to permit treatment.

TREATMENT—If the case is discovered immediately, try to empty the crop. If you know or suspect the nature of the poison, an antidote for same should be given. Where poison is due to salt, lye, or fertilizers which contain nitrate of soda, give as drinks strong coffee, brandy, or flaxseed tea, slippery elm or similar mucilaginous liquid. Where poisoning is due to copper, zinc, or lead, give white of egg in liberal quantities. For phosphorous give magnesia and afterwards flax-seed tea.

MOULD (Aspergillosis)

This form of poisoning is occasioned by fowls inhaling, or otherwise taking into their systems, mould which they obtain from mouldy food, or from mouldy hay, straw, vegetables, etc. Some people believe that anything is good enough for poultry and buy musty, burned wheat, etc. It is a costly economy and, sooner or later, Mould will be the result.

SYMPTOMS—It is indicated by lack of ambition, the fowl separating itself from the others. The bird is sleepy and sits down from lack of strength. There is usually some catarrh, with rattling in the throat, difficult breathing, and temperature above normal. There is frequently a fungus growth on the membranes, holding the mouth open and something resembling canker.

TREATMENT—Practically nothing can be done. Birds dying from it should be burned and the remains buried. Prevention is the best plan. See that nothing of a mouldy nature, either as a food or litter, is placed within their reach. Shake out and air all straw used for litter. Frequent spraying of premises with CONKEY'S NOX-I-CIDE will be found of great value. If you wish to try treatment, give strong coffee, brandy, or $\frac{1}{2}$ to 1 grain of Quinine several times a day.

LIMBER NECK

This is ptomaine poisoning and is a very fatal disease, demanding immediate treatment. It can be easily cured in all early stages.

CAUSE—Limber Neck is caused by the fowls having access to, and eating from, putrefying animal matter. If the premises are diligently searched when this disease first makes its appearance, some dead animal, or fowl, will be found in a state of decomposition, upon which the birds have been feasting. The eating of maggots from such putrefying flesh may result in the same disease. It might also possibly be due to intestinal worms, but that is not frequent.

SYMPTOMS—The main symptom from which the disease gets its name is the peculiar action of the neck, which is so limber that the bird can-

not hold its head in position. The bird is weak on its legs and staggers and trips as it attempts to walk.

TREATMENT—First find and burn the cause, burying deeply what remains in a secluded spot. Disinfect the immediate location with a solution of CONKEY'S NOX-I-CIDE. Separate the sick birds from the others. Place one heaping teaspoonful of CONKEY'S LIMBER NECK REMEDY in a quart of water and stir until dissolved. Then give each bird one tablespoonful of the solution three or four times a day according to the severity of the attack. Hold the bird's head back and elevate the bill when giving the medicine.

If the affected flock is too numerous to administer individual treatment, good results may be obtained by giving no other water than that in which CONKEY'S LIMBER NECK REMEDY, in above proportion, has been placed, but treat individually where possible for the best results. The fowl should begin to show decided improvement after one day's treatment.

Parasites

ROUND WORMS

Worms are not a source of serious trouble among fowls, but every poultryman should know what they are, their symptoms, and the proper treatment.

This name is derived from the form and is used to distinguish them from the flat tapeworm. They are white in color, with the head pointed, and their length varies from one-half inch to four and five inches. They are not a source of great trouble unless present in large numbers, in which case their very mass interferes with the passage of food and proper digestion. Their presence also causes more or less irritation, which brings on diarrhoea, and they take so much of the fowl's food for their own sustenance that the fowl loses strength.

SYMPTOMS—It is difficult to outline symptoms which can be taken as certain evidence of this trouble. Sometimes these worms pass through the intestines and are thrown off in the excrement, in which case they can be detected. A slight diarrhoea and general symptoms of indigestion are usually present, together with a wasting away in spite of a vigorous appetite. When dressing fowls for market, be on the lookout for these worms and, if detected, note the fowls showing symptoms and give them treatment. Worms often cause staggering and this symptom is called Staggers by many as a special disease.

TREATMENT—We have a special remedy for worms which is excellent if given according to directions. The trouble is not common enough for dealers generally to keep this remedy in stock, but we will mail it to those who send to us for it. See CONKEY'S SPECIAL REMEDIES, page 68.

Illustration
No. 29.
Round Worm—
Heterakis Perspi-
um.

SCALY LEG

This disease is caused by a parasite working in and underneath the scales of the feet and legs. The scales are loosened and elevated by a powdery substance accumulating beneath them, which gradually spreads from the toes, up the legs until the feet and legs are much larger than in normal condition, often making it difficult for the bird to walk. Scaly Leg is contagious and while not fatal, it is injurious to the bird and lowers its sale value, as well as its usefulness. Never set a hen having Scaly Leg—cure her first. The disease is more contagious among fowls which are poorly cared for, but the very best cared for may contract it.

TREATMENT—CONKEY'S SCALY LEG REMEDY combines a wash and an ointment which comes in the same package. Place two tablespoonfuls of the liquid in each pint of warm water and stand the bird

Illustration No. 31
Scaly Leg.

in this until the scales are thoroughly softened. Then rub off scales gently with blunt stick, dry the legs, and apply the ointment daily for three or four days and, if necessary, use warm liquid once more to soften scales. Then again apply the ointment. It is wise to dip legs of all your fowls as above, two or three times, even if but few are troubled, as it is contagious and this may save the balance of your flock from the disease. The houses should be thoroughly cleaned and then sprayed with a solution of CONKEY'S NOX-I-CIDE, one tumblerful to a pail of water.

The Tape Worm
(*Drepanidoteia*
Infundibuliformis.)
Illustration No. 30.

TAPE WORM

The name is derived from the great length of these worms and their thinness—resembling a piece of tape.

SYMPTOMS—The symptoms are much the same as with the round worm. Frequently, however, sections of the worms may be noticed in the droppings. Fowls mope around from no apparent cause, and their plumage is rough and loses brilliancy. They become dull and listless and show no disposition to work. There is usually diarrhoea, and the birds grow weak and thin.

TREATMENT—All droppings should be burned immediately and premises disinfected with CONKEY'S NOX-I-CIDE. Follow suggestions for round worms regarding special remedy. See CONKEY'S SPECIAL REMEDIES, page 68.

LICE.

The word "Lice" explains more disease, more poor egg records, more loss to the poultryman, than all other causes combined. If a fowl is not doing well, and is in any respect below standard, the very first thing that should be done is to LOOK FOR LICE. If this book accomplishes nothing more than

to impress this emphatically upon the mind of every reader, it will have fulfilled a mission the benefit of which cannot be estimated, and will have resulted in saving many poultrymen a large amount of money, not to mention worry and disappointment.

Many people maintain that lice can spring spontaneously from filth alone. This is not true. Lice can generate only from parent stock and these, in some manner, must be introduced into a flock before lice can be present. The ways of introduction, however, are so numerous, that it is almost universally true that where the fowl is, there also will be found the louse.

There are many kinds of lice that attack the domestic fowl and we might enter into a technical description of their nature, habits and classification, but this would be a waste of time from a practical standpoint. For our purpose we can consider them under three classes, as their habits run in three directions, and it takes three different preparations to exterminate them all. NEVER PUT FAITH IN A CLAIM THAT ANY ONE PREPARATION WILL EXTERMINATE THEM ALL WITHOUT INJURING THE FOWL. We will call the three classes, Body Lice, Head Lice, and Mites.

Body Louse.
Lipeurus Variabilis.
Illustration No. 32.

Head Louse.
Menopon Biseriatum.

Mite.
Dermanyssus Gallinae.

BODY LICE—Body Lice are to be found on all parts of the fowl's body, but more generally around the vent and wherever the fluffy feathers are located. They usually remain on the fowl's body and multiply very rapidly. It is estimated that in eight weeks' time, one louse can have produced, from itself and offspring, 125,000 lice. While this species do not suck the fowl's blood, they live on the roots of the feathers and by attacking the scales of the skin. This results in extreme irritation and constant fretfulness of the birds.

HEAD LICE—These lice are of the family "pediculidae" which are true blood suckers, and have long bills with which to puncture the skin and blood vessels underneath. They fasten on the heads and throats of little chicks, leaving the head of the mother hen as soon as the chicks are hatched. They quickly sap the vitality of young chicks, and thousands upon thousands die yearly from this cause alone. Brooder chicks are not exempt unless the utmost care is taken to keep the brooder free from lice.

MITES—These pests are the worst of all, if it is possible to make comparisons. Unlike the body lice, they remain on the fowl's body only at night. During the day they hide in the cracks and crevices of the roosts, droppings boards, walls of the houses, etc., or any spot where they can conceal themselves. Where the roost comes in contact with the side of the building, they find a convenient lodgment. You may notice an accumulation there which has every appearance of a handful of dust. It may escape your serious notice

for a time, until you discover that it moves and is a mass of living organisms—a countless body of mites waiting for roosting time. What a reception for the flock, which has spent much of the day in a vain effort to rid themselves of the body lice by diligent picking and scratching, to have this army of Mites quickly spread themselves over their bodies, to bite, or bore, through the skin, suck their blood, deprive them of rest, and sap the best of their vitality!

CAUSE—As stated above, lice do not spring up themselves, though the main cause of their increase is carelessness and filth. Where you find a flock poorly housed in damp, mouldy, ill-smelling quarters, and lacking in the constant care and attention they are entitled to, there you will find lice in countless numbers. The very rapidity of the increase of these pests explains how necessary it is to everlastingly fight them, with absolutely proper preparations for killing them, and by keeping the house and surroundings scrupulously clean. By keeping your fowls hard at work and in vigorous health you will avoid a great portion of this trouble, as lice are not nearly as apt to infest the thrifty, healthy fowl as the bird which is depleted in health and strength. Always provide suitable and sanitary quarters if you wish the most from your flock.

SYMPTOMS—Fowls troubled with lice show a decided restlessness. They are continually picking, scratching or dusting themselves. Their plumage becomes ragged and torn from constant picking, and faces, skin, and combs become pale. They grow listless, thin, and finally become but skin and bones. The egg record grows less and less until there is nothing to record. Frequently a dead fowl is found under the roost. Sitting hens leave the nests frequently, and often forsake them, as they grow sick and are forced to give up in self-defence. Little chicks have bowel trouble and drop off, or slowly droop and die. It is impossible to name all the symptoms. Many put the symptoms down as those of cholera and other diseases, and “doctor” their flocks accordingly. They are unwilling that anyone should even suggest the presence of lice in their flocks, when these pests are, perhaps, the only menace that stands between them and success.

TREATMENT—The first thing to do is to clean up and to remove all filth and uncleanness from in and about the poultry houses, and to make the quarters neat and sanitary—**AND KEEP THEM SO.** Don't allow droppings to accumulate, and it is best to remove them daily. Droppings boards under the roosts are an absolute necessity, as they can be kept clean with but very little labor. This will put you in position to most effectually use the proper remedies for overcoming lice. Provide the fowls an ample dust bath of clean, fresh earth, (not road dust as is generally recommended) and they will soon make dust of it. To this should be added a liberal sprinkling of **CONKEY'S LICE POWDER.**

TO KILL BODY LICE—For successfully fighting body lice, a good powder is the most practical treatment. Fowls should be grasped by the legs and held head downward, while **CONKEY'S LICE POWDER**, which is the best combination of lice-killing agents known, should be thoroughly dusted into the feathers, and should be well rubbed into the skin, especially among the fluffy feathers.

The problem has been to find a good lice powder that at the same time would not be injurious to the fowl. **CONKEY'S LICE POWDER** IS ABSOLUTELY HARMLESS to the fowl, and it does rid the fowls of lice. It acts in two ways, both by odor and by contact. Lousy fowls should be dusted thoroughly every ten days, or two weeks, particularly during hot weather, as the nits will hatch after the old lice are killed and

even though you kill every louse and nit on a fowl, if a single one manages later on to find lodgment on the fowl's body, its great capacity for increase will soon cover the fowl and its mates again with lice. Sitting hens should be dusted with CONKEY'S LICE POWDER several times as directed, and all nests should be freely dusted.

(One point to remember is that with many lice preparations there is danger of injuring the fowl or tainting the eggs. CONKEY'S LICE POWDER is free from this objection and can be safely used for dusting setting hens or in nests.)

TO KILL HEAD LICE—Head lice are a constant menace to the health of the adult fowls, and a greater factor in the destruction of little chicks than all other causes combined. They fasten themselves on the heads of the older fowls and suck the blood from a position just over the brain. Soon as the chicks are hatched, they catch these head lice from the old hen, or from the carelessly-kept brooder, and the lice immediately begin sucking their life blood. Unless these head lice are destroyed at once, they become death warrants for a large portion of the hatch.

You must look very closely for them, as they get clear down to the base of the feathers and may be mistaken for pin feathers. Their enormous size readily explains their death-dealing power to little chicks. Chicks raised in brooders are frequently troubled, so examine your chicks carefully. CONKEY'S HEAD LICE OINTMENT is a clean, non-poisonous, nicely perfumed ointment, which is perfectly harmless to little chicks and deadly to these murderous lice. A little is all that is needed, and saving one chick will pay you for all you would use on a hundred. Do not try to raise chicks without it. It is also good for lice on children should they happen to catch them.

TO KILL MITES—For the destruction of the much-dreaded mite, a liquid is far superior to a powder, as it can be sprayed directly into their living places where a powder cannot reach. CONKEY'S LICE LIQUID is correctly compounded, is always the same, and is guaranteed to do its work quickly, effectively, and in a manner entirely satisfactory to you. This liquid should be painted on the roosts, sprayed over the droppings boards, nest boxes, and all parts of the building where there is any possibility of Mites finding a hiding place. Care should be taken to paint the under sides of roosts, and to fill all cracks and crevices with the liquid. Not only will this kill the Mites with which it comes in contact, but its fumes will get into the feathers of the fowls when they go to roost, and will do excellent service in helping kill the body lice. It is a strong disinfectant and germicide and its frequent use will assist materially in keeping down disease. It comes in different sized cans, as listed under the heading of CONKEY'S POULTRY REMEDIES.

Before leaving this subject, we wish to outline a very quick, cheap, and sure way to rid yourselves of these pests. In the afternoon take out all litter and burn it; then remove the roosts, nest boxes, and all apparatus attached to the walls, if at all possible, and thoroughly paint same with CONKEY'S LICE LIQUID. Into each gallon of whitewash, which should have been prepared ready for use, mix about a half pint of CONKEY'S LICE LIQUID, or CONKEY'S NOX-I-CIDE if you have it. With this, thoroughly spray or paint every part of the house. Don't leave a crack or crevice that is not thoroughly soaked with this preparation. Just before the fowls go to roost, sprinkle each one with CONKEY'S LICE POWDER according to directions, immediately putting the bird carefully on the roost before it has had time

to shake itself. After treating all of them in this manner, shut the house. In an hour or two, open the door or curtain for a few minutes, as you will find the house filled with the fumes from the powder, and it will be necessary to let in some fresh air before closing the openings for the night. We have known this plan to be followed by those whose houses and birds were "alive" with lice, with the result that the next day not a louse or mite could be found even after the most rigid examination. The secret of keeping these pests down lies in regularly going over the fowls and houses carefully. Keeping everlastingly at it is the price of success.

THE DEPLUMING MITE

This parasite usually makes its appearance in the spring and summer and attacks the roots or base of the feathers, which break off and leave a bare spot. It is quickly passed from one fowl to another and rapidly spreads through an entire flock. The bare spots left by the work of these mites will not present an abnormal appearance but, if near-by feathers are removed, the mites can be detected at their base, having the appearance of fine dust.

TREATMENT—All houses, roosts, etc., should be gone over carefully with whitewash, in which has been mixed CONKEY'S LICE LIQUID or CONKEY'S NOX-I-CIDE. The fowls should be annointed every few days with CONKEY'S HEAD LICE OINTMENT, and this should be persisted in. It will be found very effective to dip the fowls in a one-per-cent solution of NOX-I-CIDE— $\frac{1}{2}$ tumblerful to a pail of water—repeating the operation in from three to five days.

STICK-TIGHTS OR HEN FLEAS

The Stick-tight is a flea which is very annoying in many of the southern states. It is sometimes called the Hen Flea and is a common pest in warm climates. It is generally found attached to the comb and wattles, with its head buried in the flesh. In many cases these insects are so crowded about the eyes that the bird cannot see to eat. It is impossible for the bird to remove them, and they cling so tightly that the poultryman cannot pick them off.

TREATMENT—CONKEY'S FLEA SALVE effectually destroys stick-tight fleas without harming the bird in the least degree. You may find them on the bird in the morning after applying, but they will be dead and can easily be brushed off. You must rid the premises of them also, for they will be on the ground and in the houses. Spray the ground, houses, nests, and roosts with a solution of CONKEY'S NOX-I-CIDE—one tumblerful to a pail of water, and keep this up two or three times a week until the fleas have entirely disappeared. Rub CONKEY'S FLEA SALVE on the comb and wattles where you can see the fleas. It is not necessary to have a thick application, but only enough to smear the fleas thoroughly. This salve will not injure the fowl's eyes, and one application is usually sufficient, though a second may be necessary in aggravated cases, and to kill the nits which may hatch out. Fleas breed in dark, dry places, where the rain cannot reach, as moisture stops this breeding. Deprive the fowls of all shade where rain cannot reach.

Various Diseases

CHICKEN POX—SORE HEAD

This disease is known by different names in different localities, such as Sore Head—Pigeon Pox—Warts and Pian. It is a fungus growth which

multiplies rapidly and develops in poultry houses that are not properly cleaned, especially where accumulated droppings have become wet. Moisture must be present to produce the growth. Chicken Pox is very contagious, though not necessarily fatal, and is a very annoying and disgusting disease, which brings down the general health of fowls and opens the way for other diseases. It is often called the Small Pox of the poultry yard. If allowed to run, it leads to weakness and death.

CAUSE—It is often introduced by new birds, though certain conditions in a poultry house will start the disease. It is especially noticeable in damp, cold weather, and in houses which are not kept clean and dry. It attacks chickens, turkeys, pigeons and geese, but principally chickens and pigeons.

SYMPTOMS—Scabby warts on the comb, lobes, and face. These are yellow and rough and resemble the common wart. When broken they discharge a thick yellow liquid.

TREATMENT—Isolate all affected birds and thoroughly disinfect the houses, etc., with a solution of CONKEY'S NOX-I-CIDE, one part to fifty of water. Then dry out by opening doors and windows. CONKEY'S CHICKEN POX REMEDY is a combination salve and powder which come in the same package. Apply the salve daily to affected parts, and the cure is hastened if the warty growths are softened with warm water and soap, and the tops of the warts are gently removed with a blunt instrument, before applying the salve. Place one teaspoonful of the powder in each quart of soft feed, and give this to the birds once a day for four days and discontinue for three days. If necessary to continue longer, use half the amount to each quart of feed, keeping it up for three days, and so keep on, gradually reducing the amount.

WHITE COMB

Many confuse this ailment with Favus, though it is entirely distinct. It is quite a mild disease, showing an apparent white powdering of the comb, which looks like flour, or Plaster of Paris. It sometimes extends over the head and down the neck, causing the loss of feathers.

CAUSE—It is generally due to dirty quarters, or over-crowding in houses, or a lack of green food. A frequent cause is a lack of fresh air, sunshine, range, etc., and close confinement. This is not of a fungoid origin, and is not as highly contagious as Chicken Pox and Favus.

TREATMENT—White Comb succumbs to the same treatment as Chicken Pox and Favus, and CONKEY'S CHICKEN POX REMEDY will be found efficacious.

INFECTIOUS LEUKAEMIA

This is not an uncommon disease, but one which is little understood or suspected by the average poultryman. It is caused by bacteria which are bred and nourished by unsanitary and foul conditions in brooders, poultry houses, yards, etc. It is contagious and fatal.

SYMPTOMS—Loss of strength, dullness and drowsiness. The temperature is two or three degrees higher than normal. The effect of the disease is to increase the white and decrease the red corpuscles of the blood and, as a consequence, the comb, wattles, skin, and all visible mucous membranes, such

as those of the mouth and head passages, become pale. Death usually occurs in from four to five days, though life may be prolonged for several weeks.

TREATMENT—Poultry premises should have a thorough cleaning and everything about the place should be thoroughly disinfected with CONKEY'S NOX-I-CIDE, one part NOX-I-CIDE to 100 of water. This must be repeated daily until the disease is checked, and the utmost cleanliness must be observed. Only clean, pure, wholesome food should be given, and drinking water must be frequently changed, and should be given in fountains which will keep out the filth and droppings from the birds. CONKEY'S POULTRY TONIC should be fed daily in the mash.

FAVUS

This disease is a growth of the fungus known as "*Achorion Schoneinii*." This same fungus has been known to attack man, as well as dogs, cats, mice, rabbits and horses. It is easily acquired and may attack the most healthy fowl. It is highly contagious.

Favus.

Illustration No. 33.

CAUSE—This growth may start in damp and ill-ventilated quarters, or it may be acquired by horses rubbing against infected trees or posts and communicating it to fowls by infection in the stables.

SYMPTOMS—Small white or gray spots on the comb, round or irregular, from the size of a pin-head to that of a dime. They extend in size and increase in numbers until nearly all the skin of the affected part is covered. They then form in a thin scale or crust on the surface of the skin. This crust thickens as the disease advances and becomes cup-shaped in form; that is, raised on the edges and depressed in the centers, and it will keep on until the deposit may be a quarter of an inch in thickness. While confined to the comb and head, Favus may be very successfully treated but, if allowed to run until

it begins to appear in the region of the vent, it is difficult to cure and birds may die of debility. In handling cases of genuine Favus, considerable care should be taken. While the fungus of Favus will not attack the healthy human skin, a slight crack, cut, or abrasion may become infected and turn into an ugly sore.

TREATMENT—The same treatment as in Chicken Pox, which Favus much resembles, will be found effective.

DROPSY

This is due to the accumulation of water or liquid, usually in the abdominal cavity, and can be easily detected by the distention and by feeling the parts. The swelling will not be hard, but will easily yield to pressure, only to bulge out at another point. Affected fowls will lose appetite and have every symptom of general debility.

TREATMENT is very unprofitable and unsatisfactory.

FROSTED COMB

There is no remedy for a frosted comb if it is allowed to thaw and become black. It is, therefore, necessary that active treatment should be given as soon as noticed.

TREATMENT—Where snow can be obtained apply the same with the hand, holding it to the comb until all frost has been extracted. Then anoint the comb with CONKEY'S HEALING SALVE, kneading it gently while applying. If carefully attended to, only the extreme tips of the comb need be lost and possibly you may be able to save the comb intact.

LEG WEAKNESS

This is usually caused by forcing the growth of the chick too rapidly, especially broilers, and not providing in the ration sufficient muscle-producing material. Another frequent cause is improper temperature in the brooder. Where there is too much bottom heat, this trouble will be encountered. This is also found in cases of metallic poisoning, birds losing entire control of their legs.

SYMPTOMS—The name is a good indication of the nature of the trouble. The fowl walks, or stands, with difficulty, and it may sit down while eating. This is sometimes taken for rheumatism, but in leg weakness the shank remains soft, while in rheumatism it dries up and becomes hard and contracted.

TREATMENT—If the cause is improper heat in the brooder, change it. If improper feeding, build up the general health by discontinuing heavy carbonaceous foods, such as cornmeal, bran, corn, etc., and give wheatbran, boiled beans, Canadian peas, together with meat meal and a goodly supply of alfalfa or clover meal in the mash. CONKEY'S POULTRY TONIC should be fed daily in mash, and rusty nails, or old iron, put in drinking water. Cut down the food supply, as overfeeding is a most frequent cause. In case of poisoning, give milk, whites of eggs, or some good emulsion of cod liver oil, daily.

RHEUMATISM

This disease is much the same as in the human family and, while it is not fatal, it keeps the fowls in a totally unprofitable condition.

CAUSE—Rheumatism is occasioned by exposure to dampness, cold weather, or may be due to poorly constructed houses, improper care and feeding, etc.

SYMPTOMS—It is indicated by stiffness of the joints with more or less contraction of the muscles. Birds walk stiffly and lame, and lack energy and activity.

TREATMENT—Provide dry, bright quarters. A large amount of green food should be given, particularly alfalfa or clover, and very little meat or animal food should be fed. CONKEY'S RHEUMATIC REMEDY is very effective in relieving the fowls from this trouble and restoring them to health and usefulness.

APOPLEXY

Apoplexy is the result of a ruptured blood vessel of the brain, and the pressure of the blood that escapes therefrom.

CAUSE—It is caused by violent exertion, fright and by great straining while laying eggs—hens being sometimes found dead on the nests. They will occasionally be attacked while on the roost and drop off, or may suddenly fall and die when in the yard.

TREATMENT—Very little, if anything, can be done for the cure of this trouble. Preventive treatment is the best and, for this, see that fowls have plenty of exercise and a properly balanced ration in proper quantities. If you wish to attempt treatment, follow directions under "Congestion of the Brain".

CONGESTION OF THE BRAIN

Like apoplexy, this is not a common disease, and yet some poultrymen's birds suffer to quite an extent from it. Over-fat birds are the principal victims, though exposure to extremely hot rays of the sun will produce it. You will usually find intestinal worms present in affected birds.

SYMPTOMS—Giddiness, convulsions, and uncertainty in walking. The head is thrown backward and upward. Sometimes the bird will appear drowsy and stupefied.

TREATMENT—Provide a quiet, cool, and sanitary place for the bird. Apply very cold water or ice to the head, as it is important to reduce the temperature. Give a good dose of CONKEY'S POULTRY LAXATIVE and repeat if necessary. If you see evidence of intestinal worms treat as suggested under that heading.

FITS

The cause of this disease is more or less guess work. It may be due to the pressure of worms in the intestines, or to pressure on the brain. The fowl will be subject to convulsions and unconsciousness, but may gradually recover and become apparently well.

TREATMENT—Little or nothing can be done unless the trouble is due to worms, in which case treat as indicated under that heading. If this does not cure, it is best to kill the fowl.

BUMBLE FOOT

This is no more or less than a stone bruise, and is generally caused by the fowl jumping from the roost on to some hard substance, thereby bruising the foot, although it may be caused in other ways.

SYMPTOMS—It is indicated by a hard, calloused substance on the bottom of the foot. This will become inflamed, causing much irritation and suffering. The fowl will favor this foot while walking or running and rests the foot while standing.

TREATMENT—If you notice it in its early stages, before pus has formed underneath the surface, the difficulty may be overcome by soaking the foot in warm water, paring off the hard substance, and painting it with tincture of iodine; but if pus has formed, then an incision should be made into the pus cavity with a sharp knife which has previously been dipped in a solution of NOX-I-CIDE and water. The hard substance should be pared off, the wound should be carefully washed with NOX-I-CIDE solution and, when dry, CONKEY'S HEALING POWDER should be

applied. The foot should then be so wrapped up with cotton cloth as to protect the wound and keep out all foreign matter. The pen should be covered with fresh, clean straw to prevent further injury. It is well to dress the wound once a day for several days, until it is fairly well healed. Study the original cause of this trouble and remedy it.

WIND PUFF (AIR BLISTER)

This appears mostly in little chicks. Its cause is an open question. It may be recognized by a puffing up of the skin, air being present underneath. Puncture the skin with a needle, or sharp, thin knife, and if this does not effect a cure, cut out a small piece of the skin and apply CONKEY'S HEALING POWDER to the surface.

CUTS, BRUISES, BURNS, ETC

Birds are liable to these accidents and it is well to attend to them immediately, as such wounds permit the entrance of bacteria to the system, which might prove fatal.

TREATMENT—Wash the affected part with a solution of CONKEY'S NOX-I-CIDE, two teaspoonfuls to a quart of warm water. Allow to dry and then apply CONKEY'S HEALING POWDER. Repeat every other day until cured. If you have not the NOX-I-CIDE, use Castile soap and warm water, applying CONKEY'S HEALING POWDER as above. You will not only prevent complications, but you will be surprised at the speedy recovery. Fowls should be separated and placed in coop containing litter of clean, dry straw, or similar material, so that foreign matter cannot enter into the sores.

BROKEN LEGS

Fractures sometimes occur even in the best-regulated poultry yards. If a little chick, or growing fowl, is the sufferer, it may be cured by bringing the broken parts together and winding around the leg a piece of clean cotton cloth. Use toothpicks, or larger pieces of wood, for splints or supports, and bandage these between the layers of cloth. A half dozen winding will be enough. Sew firmly to the bandage and allow them to remain until the leg is healed. It will take but a short time. It is not wise to try this with heavy fowls, or to treat broken bones other than those of the legs. If there is an abrasion of the surface, it would be well to wash it with a weak solution of CONKEY'S NOX-I-CIDE before dressing.

MOLTING

Molting is shedding the feathers. This is a natural function which should occur annually. It is a very trying period on the bird, and everything possible should be done to lessen the suffering and to shorten the period. Some advocate feeding nothing for a week or ten days, thus forcing the feathers to be dropped quickly; then, after the feathers have been dropped, to feed heavily, especially with animal foods, and those containing a high percentage of protein.

We think it best to underfeed slightly and to give simple foods. See that a liberal supply of green food, such as clover or alfalfa, is given. Give warm mashies in the morning, putting in a teaspoonful of CONKEY'S POULTRY TONIC to each quart and making the mash crumbly. Feed grain in the litter and make the fowls work. It will be found of great value to put in each mash a quantity of linseed meal. A plentiful supply of beef

scrap, or similar animal food, should be kept before the fowls, especially after the feathers have been dropped and new ones begin to come in. This is of the greatest importance. Keep the fowls free from lice and provide them with clean, dry, and sanitary quarters. Remember that the fowls' vitality is low at this period, and they are therefore peculiarly susceptible to disease. CONKEY'S POULTRY TONIC will keep up the strength and protect your flock.

Injurious Habits and Vices

EGG EATING

While this is more of a habit than a disease, it is often caused by a physical longing for oyster shell, or other lime-containing, shell-making material, and the absence of sufficient animal food in the diet. It is a most annoying and expensive habit and a difficult one to break. No sooner is there an egg laid than it is eagerly eaten, and one fowl quickly teaches the others until a number in the flock may be seen to rush for an egg as soon as it is deposited in the nest.

TREATMENT—One of the best methods is to make a small incision in either end of an egg and allow the contents to run out. Then make a mixture of soft soap and red pepper and refill the egg, closing the ends with court plaster and placing a number in the nests where the fowls can get at them. If these are eaten, fill others. It should not take long to sicken the fowls of the habit. If you will see that fowls are kept busy, that shell-making material is provided, such as oyster shell, mortar, bone etc., and that the nests are dark and well supplied with straw, you will have but little trouble from this cause. Remember to darken nests as much as practicable, have china nest eggs, and always collect freshly-laid eggs as quickly as possible. **BEAR IN MIND THAT THERE IS A DIFFERENCE BETWEEN SHELL-MAKING MATERIAL AND GRIT. THE FOWLS NEED BOTH AND NO ONE SUBSTANCE WILL ANSWER FOR BOTH PURPOSES.**

FEATHER EATING

This is a bad habit and is usually caused by a desire for meat or insect food, giving too much carbonaceous food, and a lack of exercise. Rarely does this habit develop among fowls that have free range, or that are fed balanced rations.

TREATMENT—Give the fowls more range if possible. Spade up the yard, bury the grain food in the loose earth and make the fowls work for it. When grain is fed in the evening, scatter the same in the litter. In winter feed grain in deep litter. Provide plenty of animal food. Never feed enough to make fowls lazy. Keep them busy—thinking of something else.

PREVENTION OF DISEASE

"An ounce of prevention is worth a pound of cure" is a saying that has proved its truth by years of demonstration. Most of the diseases of poultry can be traced to carelessness or to unsanitary and dirty quarters. While the housing, feeding, etc., must be given due attention, cleanliness is of paramount importance.

Disease germs are found wherever filth and dirt abound. Even though the droppings of the fowls are frequently removed, it is not all that should

be done to render the premises sanitary. A liquid disinfectant should always be kept on hand and, while absolutely effective, it must be perfectly harmless to the stock. This should be sprayed in and about the houses, pens, barns, etc., AFTER A THOROUGH CLEANING HAS TAKEN PLACE. A disinfectant is not a labor-saver for a lazy man, but a money-maker for the industrious and careful man. IT IS NOT INTENDED TO COVER UP FILTH, and will not take the place of the shovel and the hoe, but it will deodorize, kill the germs, and make everything sweet and wholesome after the filth has been removed.

The germ theory of disease has ceased to be a theory—it has proved itself to be a fact! Once the germ is introduced, disease will continue until the germs have been exterminated. Nothing equals a proper disinfectant. Realizing the necessity of an article that could be absolutely relied upon, and would be so inexpensive that the cost would cut but little figure, and that would be easy to apply, we have placed on the market CONKEY'S NOX-I-CIDE, a soluble deodorant and germ destroyer that is unequalled, anywhere, for strength and efficiency. It is of the greatest value for disinfecting poultry houses, runs, brooders, dog kennels, stables, cesspools, sinks, drains, slop-bowls, and for household use and sick-rooms. See description on another page, and send for special booklet on CONKEY'S NOX-I-CIDE.

Conkey's Poultry Remedies

The nature of poultry diseases has been our study for years, and our researches have been so thorough and practical, that we are the acknowledged authority along that line, while our remedies have become standard in every civilized country of the world. Many have put out "cure-alls," which they recommend alike for various classes of disease, while common sense prescribes a separate and specific remedy and treatment for each particular disease. We have not made our investigations on general lines, but have studied each disease by itself and in its proper relation to other diseases, and on this logical basis we have compounded our remedies. They do not work in a roundabout way, or in a general manner, but each finds its way immediately to the seat of trouble to reach the disease at once.

The greatest secret of curing disease is to apply the remedy in the earlier stages, and we have put up our remedies in such convenient form that they can be administered at once and with the least inconvenience. They are inexpensive and should be kept on hand, so that they can be used at the logical moment without waiting to send for them.

Because of the excellence of our remedies, we positively guarantee them, not only to be exactly as represented, and to do just what we claim for them, BUT TO PLEASE YOU and, if they fail to satisfy you, for any reason, we will refund your money cheerfully without the least argument or red tape.

FREE ADVICE

Many poultrymen have trouble recognizing certain diseases among their fowls. We have therefore opened A BUREAU OF INFORMATION which will furnish, ABSOLUTELY FREE OF CHARGE, advice regarding any sick fowls, with diagnosis and prescription and directions for general care and treatment. WRITE TO US AT ANY TIME. YOUR WANTS WILL HAVE PROMPT ATTENTION AND THE BEST ADVICE THAT WE CAN OFFER.

COMMON MEASURES

(Approximate)

- 60 drops equal 1 teaspoonful.
- 4 teaspoonfuls equal 1 tablespoonful.
- 8 teaspoonfuls equal 1 ounce.
- 4 ounces equal 1 gill.
- 4 gills equal 1 pint.
- 2 pints equal 1 quart.
- 4 quarts equal 1 gallon.
- 3 gallons (about) equal 1 pailful.
- How to Make a 1% Solution (1 Part to 100).**
- ½ teaspoonful to 1 tumbler (about 8 oz.) of water.
- 1 teaspoonful to 1 pint of water.
- 8 teaspoonfuls to 1 gallon of water.
- ½ tumbler to 1 pail of water.
- 1 tumbler (8 oz.) to 6½ gallons of water.
- 1 pint to 12¼ gallons of water.

CONKEY'S ROUP REMEDY—This truly superior remedy is used in every civilized country of the world. It is the old stand-by. Until it was brought out Roup was considered incurable. Innumerable trials under every condition and in every climate prove its effectiveness if given in anything like reasonable time. **THIS REMEDY SHOULD BE KEPT ON HAND** so that you do not have to wait and let your fowls die before applying it. Fowls are many times cured of Roup, even in more advanced stages, by dipping their heads according to special directions with package. Even in very bad cases if the remedy can be made to reach the membranes of head and throat passages, it will prove successful, providing that the fowl has enough vitality left for any foundation. If attended to earlier, you avoid the trouble of individual treatment. **CONKEY'S ROUP REMEDY** is also excellent for **Turkeys**. We especially recommend it for **CANKER IN PIGEONS**. If your poultry supply dealer or druggist cannot supply you, send to us direct. Prices 50c and \$1.00, post-paid.

CONKEY'S BRONCHITIS REMEDY — Bronchitis is an inflammation of the membranes of the bronchial tubes. Very often it is confused with Roup. While it often appears in a flock where there is Roup, it is a distinct disease and calls for treatment with a special remedy.

The careful discrimination between this disease and genuine Roup will save you many a fowl besides the useless trouble of treating for one disease when it is entirely another. Price 50c post-paid.

CONKEY'S CHOLERA REMEDY—When a fowl is attacked by diseases of the digestive organs, there is a loss of appetite and a greatly increased thirst; therefore we have put out this remedy in such a form that it must be given in the drinking water. As the fever creates a continuous and violent desire for water, the logic of this treatment can be

appreciated. Most of the so-called cholera remedies on the market are powders directed to be given in the food. Realizing the utter absurdity of trying to cure the fowl in that manner, since the sick bird loses its appetite for food we have put out CONKEY'S CHOLERA REMEDY in such a form that the fowl will take its own medicine. This preparation is entirely different from anything else ever put out, and can be absolutely relied upon as the most dependable Cholera Remedy made. It has a soothing, cooling effect on the hot and inflamed membranes and reduces the fever at once. For the treatment of Cholera, Indigestion, Bowel Trouble, Diarrhoea, and all kindred troubles in chicks or grown fowls, this remedy is excellent. CONKEY'S CHOLERA REMEDY is a common-sense insurance against

a great variety of the troubles known to poultrymen. It should be kept on hand by everyone who raises little chicks, as it will be needed at once on appearance of indigestion or bowel trouble. We guarantee it to satisfy you. Prices 25c and 50c postpaid.

CONKEY'S CHICKEN POX (Sorehead) REMEDY—It is a reliable remedy for a disgusting and dangerous disease. Chicken pox is known in different localities by entirely different names, being called Pian, Sore-head, Warts, and Pigeon Pox. They are all the same contagious and loathsome disease and can be cured if taken in anything like proper time.

It is very important in treating this disease that absolute cleanliness should be considered and, while we sell CONKEY'S NOX-I-CIDE in separate packages and for a separate price, it should be considered an important part of the treatment for Chicken Pox. Unless you clean and disinfect the house so as to kill the disease germs, a fresh outbreak is liable to occur at any time.

The salve is applied to the warty growths according to directions, while the powder is given in the soft feed to drive the disease from the blood. You will find it a very successful treatment and will never use another after a thorough knowledge of its effectiveness in combatting this annoying and nauseating disease, which is well named the "Small Pox" of the poultry yard. Prices 50c or 55c, postpaid.

CONKEY'S LIMBER NECK REMEDY—Limber neck may prove to be a very fatal disease, as it takes but a little time to terminate in death if a remedy is not at hand. We would certainly advise poultrymen to provide themselves with a package of CONKEY'S LIMBER NECK REMEDY at once, and not to wait until the disease is established and they learn its fatal

nature by costly experience. In the first place it is a very easy matter for the fowls to acquire this disease. It is a ptomaine poisoning which comes from the fowls eating putrefying flesh. A dead rat under the barn, or a dead fowl in some out-of-the-way corner, may cause this deadly ailment when you are not prepared to meet it and, before you can send and procure the remedy, many of your fowls are past saving. While Limber Neck is terribly fatal when no remedy is available, it is a very easy disease to master when CONKEY'S LIMBER NECK REMEDY is at hand, and we are receiving endorsements from many poultrymen who have cured their fowls, though they have believed this disease incurable in years past, because they did not have the remedy on hand. **DON'T LET IT BE TOO QUICK FOR YOU**, but insure your flocks by having it on your shelf. One day's treatment should result in decided improvement. CONKEY'S LIMBER NECK REMEDY is a special remedy for this one disease only. Do not be deceived by substitution of anything that is claimed to cure both this and other diseases. The age of cure-alls has passed and poultrymen are realizing that each disease should have its special remedy. Prices, 50c or 55c, postpaid.

CONKEY'S SCALY LEG REMEDY—

Scaly Leg is a parasitic disease—the parasites burrowing under the scales of the legs and feet as described on page 53. Scaly leg is very contagious. It is not fatal, but it ruins the appearance of the birds and also saps their vitality and usefulness. This remedy is simple to apply and is guaranteed to cure. It is also excellent as a dressing for the feet and legs of show birds, increasing their "point" value, and putting them in the very best possible condition as prize winners. Price, 25c.

CONKEY'S GAPE REMEDY — This is a reliable remedy for this extremely troublesome disease. Many people have experimented with irritating powders, fumes, smoke, etc., but have found them not only ineffectual, but positively dangerous to the fowls. They have also used extractors, horsehairs, wires, etc., with no greater satisfaction.

In CONKEY'S GAPE REMEDY we have a preparation guaranteed to do the work and satisfy you. This remedy tones up the system, and acting through the circulation it is brought into contact with the worms. Gapes is such a dangerous disease that we advise you never to be without this remedy when you have little chicks. Given occasionally in the feed, it will be found an excellent preventive. Prices, 50c or 60c, postpaid.

Among the different chick diseases there is not one which causes the poultryman more annoyance. We feel gratified to be able to offer you a preparation of genuine merit in CONKEY'S GAPE REMEDY.

CONKEY'S WHITE DIARRHOEA REMEDY—This is one of the most helpful articles ever put out. Thousands and thousands of little chicks die each year from this fatal White Diarrhoea. The disease long baffled scientists and practical poultrymen alike. Many are still arguing as to just what causes this fatal pasty discharge which each year carries off a large percentage of all chicks hatched. Whether it is the germs *Coccidium tennelum* or the *Bacterium Pullorum* scientists may argue, but we know this: **CONKEY'S WHITE DIARRHOEA REMEDY** in the drinking water acts on the specific organism which causes the disease and saves the hatch.

As cautioned Page 43 every effort should be made to prevent this disease getting a start in the flock. Care should be taken to select eggs from good stock and then to treat these eggs before setting them in the incubator. Wiping with 95% grain alcohol is usually recommended, but dipping the tray of eggs boldly in a 3% solution of Conkey's Nox-i-cide will answer the same purpose and be found much less expensive as well as more convenient. To make a 3% solution use 2 tablespoonfuls Conkey's Nox-i-cide to each quart of water. Of course the solution should be warm when used. To sterilize the incubator, brooder, etc., use a stronger solution, about 10% Nox-i-cide.

After the chicks are hatched use Conkey's White Diarrhoea Remedy in the drinking water from the start, and thus avoid infection.

This is preventive. But even after the disease gets a start in the flock the chicks can be treated successfully, by the use of Conkey's White Diarrhoea Remedy in the drinking water. The water remains pleasant to the taste, so the chicks will take it readily. Even in bad cases, when chicks are gummed at the vent, the treatment is successful, provided the hardened accumulation around the vent is removed very carefully, as explained page 25 and the White Diarrhoea Remedy used in the drinking water.

Never take chances with White Diarrhoea. Have a package of Conkey's White Diarrhoea Remedy on hand and use it for prevention. We guarantee satisfaction whether used as a preventive or as a remedy. Prices, 25c and 50c postpaid.

CONKEY'S POULTRY TONIC—is a remedy especially valuable for fowls run down, off feed, recovering from disease, or during moulting season. It is also excellent for little chicks which do not seem to thrive. This is made to meet a growing demand for a tonic to be given in cases which are not thoroughly classified or understood. It is a general invigorator, quickly bringing birds to a normal condition. Prices, 25c or 30c postpaid.

CONKEY'S BLACKHEAD REMEDY—A special remedy for Blackhead (*Enterohepatitis*). This has been used many times and in many places with most excellent results and is guaranteed to please you. Price, 50c postpaid.

CONKEY'S RHEUMATIC REMEDY—This is a highly successful combination treatment consisting of a powder to be taken internally, and a liniment for applying direct to the affected part. It will be found dependable if used according to directions. Your satisfaction is guaranteed. Price, 50c, or 55c postpaid.

CONKEY'S POULTRY WORM REMEDY—This is a most necessary article, as it rids the fowl of harmful as well as other worms, promoting the return of a healthful condition. Price, 50c, postpaid.

CONKEY'S POULTRY LAXATIVE—As a reliable laxative is often needed by itself, or in connection with another poultry remedy, we have added a preparation which is dependable, and entirely harmless. It can be used as a laxative or purgative according to the dose. It is compounded for poultry especially, is always of the same strength, and does its work thoroughly without depleting the energy or usefulness of the fowl. It is a great help to the man who makes money from poultry. Price, 25c, postpaid.

CONKEY'S HEALING SALVE—The poultryman should not fail to keep this remedy on hand. It is a good antiseptic ointment and has many uses in healing various wounds, cuts, sores, and eruptions. Equally valuable for human use. This article will be found

highly satisfactory in every way, and very inexpensive. Price, 25c, postpaid.

CONKEY'S HEAD LICE OINTMENT—Thousands of little chicks are killed each year by head lice—the largest blood-sucking louse that infests poultry. Head lice cause more loss of chicks than all other causes combined, both directly and by weakening the chick's health and affording opportunity for other troubles. **CONKEY'S HEAD LICE OINTMENT** is a carefully prepared non-poisonous, semi-liquid article with an agreeable odor, and is very destructive to the murderous lice while harmless to the little chicks if used as directed. (It is unexcelled for killing lice on little children).

It should be remembered that powders are not effective in killing head lice, and this is the only practical way to reach them. Easy to apply, and a little does the work. It will pay for itself in saving one chick. Prices, 1 oz. tube, 10c; 3 oz. tube, 25c, postpaid.

CONKEY'S LICE POWDER—For successfully ridding fowls of body lice nothing can equal a powder which is properly made. We consider this one of the best of our various preparations and offer you an article which is of a strength to make it entirely effective and at the same time harmless to the fowl. It does not simply make the lice move, but it really kills them. To prove this for yourself, simply dust a fowl thoroughly with **CONKEY'S LICE POWDER**, then stand it on a sheet of white paper and ruffle its feathers, and the lice may be found really dead on the paper. Lice simply cannot exist

where **CONKEY'S LICE POWDER** is properly used. Hens that spend the day picking and scratching, in a vain effort to rid themselves of parasites, cannot give you satisfactory returns and because of their lack of vitality, are susceptible to all kinds of disease. **CONKEY'S LICE POWDER** is guaranteed to please you. It will kill lice on poultry, cattle, horses, fleas on dogs, and vermin of all kinds. It can be used also for bugs on cucumbers, squash, and melon vines, slugs on rose bushes, etc. It is an effective disinfectant and germ destroyer. Prices: 5 oz. pkg., 10c, or 15c, postpaid; 15 oz. pkg., 25c, or 40c postpaid; 48 oz. pkg., 50c, expressage extra; 100 oz. pkg., \$1.00, expressage extra.

CONKEY'S LICE LIQUID—There are a great many poultrymen who do not seem to understand that the Mite requires entirely different treatment than the ordinary louse. There is no powder made that will entirely rid you of the Mite, and until you are rid of him he will multiply until every fowl you have is rendered useless or dies from exhaustion. In our opinion, the Mite will do more to reduce the profit of your fowls than all other varieties of vermin combined. **CONKEY'S LICE LIQUID** will immediately destroy these terrible pests, and will rid your poultry house of its greatest profit killer.

It can be painted on the roosts and applied to cracks and crevices, with a brush, full strength. Then mix 1 part **CONKEY'S LICE LIQUID** with 25 to 50 parts water and spray the whole house thoroughly. Repeat in a week or 10 days. This makes an excellent disinfectant and germ destroyer and is cheap as it mixes with water. It renders the

house pure, and wholesome, and free from infection. It is the very best Mite liquid made and we guarantee it to do the work if the simple directions which come with the can are followed. Mites attack the fowls only when they are on the roosts; they cover their bodies, suck their blood, and hide by day in the roosts and walls. They do not remain on the bodies of the fowls. Prices of **CONKEY'S LICE LIQUID**, 1 quart 35c; 2 quarts, 60c; 1 gallon, \$1.00. Expressage extra.

CONKEY'S FLEA SALVE—This is a special exterminator for the Sticktight or Southern Flea. This troublesome parasite does not succumb to the ordinary lice killers, but this salve will rid the fowl of them in one, or at most, very few, applications. Prices, 25c, or 30c, postpaid.

CONKEY'S LAYING TONIC—For the hen to lay the greatest number of eggs, her health must be kept in perfect condition and the egg producing organs kept free from irritation and disease. There have been put upon the market many so-called egg producers which are irritants in themselves, while others are simply frauds, producing no effect whatever, and having no value except, perhaps, as foods for which you are paying ridiculous prices

CONKEY'S LAYING TONIC is a result of years of careful study and experiment, and is a compound of vegetable extracts, herbs, roots, etc., so proportioned as to act gently on the egg-producing organs to remove any irregularity which may exist, and to invigorate and tone the system to a point only that is perfectly natural in the highest state of the vigor and health of the fowl. It is not a false stimulant to be followed by a corresponding depression and lack of vigor, but it is a corrective that can be absolutely relied upon as in accord with scientific knowledge of fowls and their or-

gans of reproduction. Any hen will lay eggs under normal conditions, but the domestic fowl is not in its natural habitat in the first place, and in addition you demand eggs in the winter, under conditions unknown to its wild and natural state. And still some thoughtless or ignorant people say to follow nature, when, if you take their advice, your fowls would not lay enough in a year to pay for their keeping for six months. Not only must that which is lost from its changed mode of living, but that which is demanded above its natural production, be made up in some way or another. It must be made up in scientific care and feeding, or its capacity is stunted instead of increased as we demand. A properly-made tonic, to stimulate egg production in a common sense manner, becomes a necessity. CONKEY'S LAYING TONIC has this object in view—to keep the bowels in good condition, to assist digestion and assimilation of egg-producing and strength making material, to give vigor to the fowls and to induce exercise, so as to tone the bird up generally to meet our unnatural demands. By doing this the fowl is kept at its best, and egg production can be depended upon. We are in the chicken business for money, and is it not better to keep a fowl at its maximum production for two years, and then renew the stock, than to keep a fowl for three, four and five years at a lower rate of production?

CONKEY'S LAYING TONIC is not a food in itself and, in its use, you escape paying for bran and middlings which comprise the bulk of inferior "egg producers," and which you can supply for less money from your own bins. The ingredients used by us are reliable and effective. THERE IS NOT ONE PARTICLE OF FILLER IN THIS TONIC, and that is why we guarantee that if given according to directions, it will increase egg production. Don't confuse this with cheaper preparations, or with those which may have disappointed you. CONKEY'S LAYING TONIC will insure strength in cocks, more eggs and more fertile ones from hens, and rapid growth and vigorous life in little chicks. It is a big amount of value at small cost. CONKEY'S LAYING TONIC should never be fed alone; it is a strong medicine and must be mixed with food as directed. Prices, 1½ lb. pkg., 25c; 3¼ lb. pkg., 50c; 7 lb., \$1.00; 25 lb. pail, \$3.00. Expressage 25c extra on three smaller pkgs., 50c extra on 7 lb. pkg., and freight extra, 25c on pail. Expressage and freight mentioned applies only to points east of the Rockies.

CONKEY'S NOX-I-CIDE—(Formerly called Taroline). This is the poultryman's best friend. The majority of dangerous poultry diseases may be traced to the presence of germs which thrive in filth and uncleanness. CONKEY'S NOX-I-CIDE is a soluble disinfectant, deodorant and germ destroyer. It mixes with water, in correct proportion for using, one gallon making 101 gallons of ready-to-use liquid. It is the cheapest and most effective article of its kind ever put out. For poultry, it is an unexcelled article for cleaning and purifying the houses, runs, brooders, founts, and utensils. For household use it is of wonderful value in almost every department. It is unequalled for the sick room, and for purifying everything about the house, barns, outhouses, kennels, etc.

Our special booklet on NOX-I-CIDE will interest and surprise you. It shows hundreds of uses for which NOX-I-CIDE is especially adapted. It is excellent for all live stock and IS A HIGH-

GRADE SHEEP DIP. It is recommended for cuts, galls, scratches,

thrush, cracks, fissures, etc. It is an ideal disinfectant, as it removes odors, prevents flies from breeding, and sweetens and purifies everything it touches. It is excellent for eczema and skin diseases generally even for humanity. There is hardly a place in all domestic economy where NOX-I-CIDE will ever be dispensed with after it has once been tried. **GET A COPY OF OUR SPECIAL ILLUSTRATED NOX-I-CIDE BOOKLET**, for it will be found decidedly interesting and helpful. Prices, **\$1.50** per gallon; half gallon, **90c**; 1 quart, **60c**; small size, **35c**. Expressage extra. (Western prices, **\$1.50** gallon; **90c** half gallon; **60c** quart; **35c** small size.)

CONKEY'S SULPHUR FUMIGATING CANDLES—They are easy to light, safe to use, and have protecting tin basins. They weigh $\frac{1}{4}$ pound each and burn for one hour. Sulphur fumes are deadly to all germ and insect life, and neutralize germ infection when the air is moist. To successfully utilize sulphur fumes, the air should be well steamed before lighting the candles. Sulphur fumes in a dry air do not do the work intended. In places where water cannot be boiled, a very hot brick or stone in a pan of water will furnish the necessary steam. Then light the candles and close the place tightly for several hours. It may be necessary to use several of the candles at one time if the premises are large. Be careful to remove birds or pet animals. Prices, per box of 1 dozen packed neatly, **\$1.00**. Each 10c—3 for **25c**. By mail, add 5c each to cover postage. Expressage extra.

Dog Remedies

CONKEY'S DISTEMPER REMEDY—Distemper is caused by a germ and is contagious. A weakened condition favors the disease. Pure-bred puppies suffer greatly from it, although one attack usually gives immunity from a recurrence.

SYMPTOMS—The disease begins with a chill, followed by fever, the temperature going to 107 degrees. There is a discharge from the nose and eyes, sticking the lids together. Usually a rash breaks out on the inside of the thighs. In some cases there are nervous symptoms, jerking of the head, twitching of the muscles, or moaning. The bowels may be constipated, or there may be a severe diarrhoea with fetid odor. The disease runs its course in from ten to thirty days.

TREATMENT—In early stages give $\frac{1}{2}$ ounce of Castor Oil every six hours until bowels move thoroughly. Injections of glycerine (per rectum) hasten laxative action. Give **CONKEY'S DISTEMPER REMEDY** according to directions.

Nose and eyes should be washed frequently with warm water, then greased with vaseline. Throat and nostrils should be sprayed three times a day with **CONKEY'S PAIN LOTION**. The eyes should be treated with **CONKEY'S EYE LOTION**. The animal should be given beef tea, evaporated milk, fresh eggs, minced raw

beet and gruels. Allow cold, fresh water at all times. There are many complications that may occur with this disease, such as Pneumonia, Bronchitis, Inflammation of the Brain, and of the Spinal Cord, and Paralysis, usually of the hind quarters, and Abscesses are likely to form on some parts of the body. Another common sequel is Chorea or St. Vitus dance, as shown by a jerking of some parts of the body. All premises should be kept thoroughly disinfected with CONKEY'S NOX-I-CIDE according to directions on package. CONKEY'S DISTEMPER REMEDY is 50c, or 55c, postpaid.

NOTE: DISTEMPER IN CATS—Distemper in cats should receive the same treatment as for dogs, reducing the dose to $\frac{1}{4}$ amount, however.

CONKEY'S MANGE REMEDY—Like Distemper, Mange is a very infectious disease. It may be contracted from other dogs or from infected utensils, crates, etc. It is caused by a minute parasite which bores under the skin, rapidly multiplying in numbers, and causing the most intense itching. The animal bites and scratches itself continuously and loses flesh and strength. It first appears at the joints under the forelegs, on the forehead, chest, or root of the tail, and spreads until the animal becomes a loathsome object.

TREATMENT—First provide clean, dry quarters. No remedy can overcome this disease unless absolute cleanliness and sanitation are maintained. Quarters should be free from dampness and drafts and should be daily disinfected with CONKEY'S NOX-I-CIDE. Bedding should be burned frequently and new, clean, dry straw provided. Wash the animal thoroughly in a solution of CONKEY'S NOX-I-CIDE, one tablespoonful to a quart of warm water according to directions. Apply CONKEY'S MANGE REMEDY according to directions on package. It will relieve the intense itching, cool the skin and destroy the germs. Tie the animal so that it cannot have access to dirt, but will stay on its clean straw. Where the dog may rub, disinfect the spot or object with a strong solution of CONKEY'S NOX-I-CIDE. To allay the fever, CONKEY'S DISTEMPER REMEDY should be given once or twice a day. This is not absolutely necessary, but it will hasten recovery. CONKEY'S MANGE REMEDY is guaranteed to please in cases of Mange on either dogs or cats, and is an excellent remedy for Eczema, Canker, Sore Ears, Ringworm, and all forms of parasitic skin diseases. Price, 50c; 75c express paid.

CONKEY'S WORM DROPS—The dog flea is the common carrier of the larvae of the worms that often affect dogs. The symptoms of this trouble may be various, such as diarrhoea, loss of weight, restlessness, rubbing of hindquarters, muscles twitching, colic, fits, etc. Portions of worms are sometimes found in the excrement. CONKEY'S WORM DROPS have been positively proven a successful remedy. They will remove the worms without any injury to grown dogs or young puppies. This is a very common ailment and every dog owner should keep on hand a package of CONKEY'S WORM DROPS, ready for trouble. Price 50c, 65c express paid.

CONKEY'S DOG TONIC—For dogs that are run down, off feed, debilitated from any cause, or those recovering from disease. This tonic is giving satisfaction and can be depended on to bring the dog quickly to condition. Price, 50c, or 55c, postpaid.

CONKEY'S PI-NO—We call attention here to the special value of this mild disinfectant for use in the dog's bath and to rid the animal of fleas. Pleasant to use and very effective as a germicide, insecticide, etc. Keeps the skin in clean, healthy condition, improves the coat and heals cuts, sores or scratches. Prices, 7 oz., 25c; pint can, 50c; quart, 75c; half gallon, \$1. Express extra. See also page 80 and write for special booklet on PI-NO.

Conkey's Stock Remedies

The whole subject of farm animals, their care in health and treatment when suffering from disease, is gone into very fully in Conkey's Stock Book, our practical handbook for livestock owners, 224 pages, very fully illustrated, which can be had through your dealers or for 10c in stamps to cover cost of mailing.

Every Conkey Remedy is under the now world-known Conkey guarantee—IT MUST PLEASE YOU OR MONEY WILL BE REFUNDED.

There is no risk or uncertainty in Conkey treatments. We know every Remedy thoroughly before allowing it to go under a Conkey label. Every article put out can be depended on for the work we claim for it. But you have nothing to risk. In case of any dissatisfaction whatever, you have only to tell us and back will come your purchase money, no matter whether you are 5,000 miles away from us.

CONKEY'S STOCK TONIC is a general conditioner, combining the beneficial qualities of a great number of reliable medicines endorsed by veterinarians and practical managers of livestock, and also useful because if given in time, its tonic alterative effect will often completely ward off serious disorders. Read carefully the following special statements regarding **CONKEY'S STOCK TONIC**.

Under modern conditions where all live stock are pushed to the limit for healthy production, there are bound to come occasional setbacks, times when an animal is "off-feed," run down, or seems to have some general unthrifty condition.

Horses, cattle, sheep and swine all are liable to get into this general rundown, dispirited condition. Sometimes the trouble is with worms, which multiply in stomach and intestine and sap the vitality of the animal itself; sometimes it is due to digestive strain, when the animal is under heavy production or working hard in a busy season. Sometimes it is because the body functions are upset, and do their work irregularly. Sometimes the trouble is with blood running sluggishly, feebly, so that it does not quickly enough repair the cellular waste. Animals sometimes cannot make use of the feed necessary for full production, they fail to thrive and the expensive feed is wasted.

It is for just such conditions that we prescribe our **STOCK TONIC**, which acts directly on various important organs, increasing the vital contractility, and acting especially on the walls of the blood vessels, toning them, bracing them so that they send the blood racing along, repairing exhausted tissues, flushing out waste matter, dead cells, etc., which in the sluggish system generate dangerous poisons.

Thus **STOCK TONIC** cleans the blood. Clean blood works wonders always. Nature works what we call "miracles" if you can give her just clean blood to work with. **STOCK TONIC** cleans the blood and therefore acts on every vital organ. Get them all to act, these various vital organs, and there is no longer any disease, for nature will keep the animal healthy, if a sound working system is provided for her to use.

But keep this in mind: your animal is probably under heavy production, in the dairy, or fattening for beef, or pork or mutton, under heavy

strain of feeding, etc. Nature cannot keep up the unnatural strain unless you help her with a tonic occasionally, just such a tonic as this conditioner is.

A good plan is this: every so often, for safety sake, give a few doses of CONKEY'S STOCK TONIC. It will aid digestion, help the animal to assimilate its feed, increase the appetite, improve the ration and prevent waste. Digestion is the first essential. No matter how good the ration, how scientifically balanced, or how expensive the feed, IT'S WASTED if the animal does not digest it fully and return you your profit.

CONKEY'S STOCK TONIC is all tonic, no filler. Used in small doses. Prices—1 pound, 25 cents; 2½ pounds, 50 cents; 5 pounds, \$1.00; 12-pound pail, \$2.00; 25-pound pail, \$3.50. Express extra.

THE NEW MEDICATED STOCK SALT—CONKEY'S "SALT-EM". All animals need salt. But when salt is given only occasionally, they are pretty sure to take more than is good for them if they get a chance at it, and scours, etc., will result. We have studied this special need of farm animals and have made up a new preparation for horses, cattle, sheep and swine, which takes the place of salt, and combines the best suited medical elements, so that the preparation as a whole can be given as a daily tonic, digestive, and worm remedy, as well as a simple appetizer. To indicate its method of use, we have called this new Conkey article SALT-EM.

Left before stock all the time it fills their entire need for salt, and gives in addition a quick, easy way of treating common diseases. The animals will not overdose when they can help themselves any time. What they do is to take the medication just as they need it, guided by instinct, so that it acts as a sort of automatic guard of the general health condition. For instance, an animal inclined to get "off feed" will doctor itself with SALT-EM if given the opportunity. An animal troubled with worms will of its own accord lick up SALT-EM if the medication is where the animal can get at it.

SALT-EM left before animals all the time acts as a general regulator and preventive. It increases digestion, hence cuts down feed waste. It restores tone and function to overtaxed organs. As a worm medicine alone, SALT-EM would prove invaluable to any stock owner. These facts indicate the general nature of the article, but write for folder giving complete information.

SALT-EM is sold on our regular guarantee. Any stock owner can try it out in his own feed shed, with the certainty that the test will cost him nothing if in the end he is not more than satisfied. But SALT-EM will satisfy! Its results will astonish as well as please you. Prices—100 pounds, \$5; 40 pounds, \$2.25; 20 pounds, \$1.25; 10 pounds, 75 cents, f. o. b. Cleveland.

CONKEY'S HORSE TONIC—A pure, powerful vegetable tonic, harmless and very effective—"one bottle is as good as six weeks on grass." After all debilitating diseases; after foaling; in all cases of convalescence; and where the general building up of the system is essential, CONKEY'S HORSE TONIC is a most excellent investment. Price \$1.00. Express extra.

CONKEY'S HEALING POWDER—This is a most perfect healing agent for use as a dry dressing for any part. It is especially valuable as a GALL REMEDY, although, for those who prefer an ointment, we put out a special GALL SALVE. Because of the astringent and anti-septic properties we recommend CONKEY'S HEALING POWDER for the treatment of Galls, Sore Backs and Necks, Broken Knees, Running Sores, and Open Wounds, as well as for Chafes, Cracked Heels and

where skin is unbroken. It is also an effective remedy for Thrush, Sore and Tender Mouths and Canker in dog's ears. A wonderful preventive and remedy for Hobble Chafes, and excellent for all sores on human beings. Prices 25c and 50c, postpaid.

CONKEY'S GALL SALVE—Here is an excellent healing ointment. It is made especially for Harness and Saddle Galls, Chafes, Sore Shoulders, Necks and Backs and will be found invaluable during spring work. This is an all-around good article and can be used for sores, cuts, etc., on man or beast. Price 25c and 50c, postpaid.

CONKEY'S COLIC REMEDY—This remedy is remarkable for its quick results. It will relieve an ordinary case of Colic in a few minutes. It is not a drench with all its trouble to give, but just a few drops on the back of the tongue and it does the work. Can be administered while on the road. It is the simplest, surest, and best Colic remedy made. Price 50c, or 55c, postpaid.

CONKEY'S HOOF REMEDY—The hoof is more than half the horse. Keep the feet in good shape and the main foundation to usefulness and profit is assured.

CONKEY'S HOOF REMEDY has a lanolin (wool-fat) base,—to which is added other valuable ingredients,—that keeps the hoof in perfect condition with the use of the ordinary well-fitting shoe, and without expensive and useless pads under the shoe that have become such a fad in late years. It is a sure preventive for Split Hoof, Quarter Crack, Seedy Toe, Contracted Heel, and hard, dry feet. In nine cases out of ten it does away with the necessity of the bar shoe or, in other words, it gives the horse a natural foot with the least liability of being affected by road conditions, weather conditions, and other causes of the hoof undergoing unnatural contraction and expansion. It is the changing of the hoof structure which causes nearly all the foot troubles known, as well as endangering the animal from faulty action.

A farmer finds his horse lame on Monday morning and says, "I must have overworked him on Saturday." He is dead wrong! The fact is that the horse's feet got soaked on Saturday and dried out like an old boot over Sunday and the hard leafy layers press on the sensitive laminae. That same thing causes nine-tenths of all the hoof ills. **CONKEY'S HOOF REMEDY** applied Saturday night, or every other day as it should be, would have resulted in that horse going out of the stable on Monday morning like a young colt. It would not only have kept the foot normally moist, but would have supplied the moisture had the horse not been out in the mud and wet of Saturday.

If you wish to use this as a hoof packing, mix it with bran to the proper consistency and it will be found the best article for the purpose.

Prices, 1 pint, 50c; 1 quart, 75c; 2 quarts, \$1.25; 1 gallon, \$2.00. Express extra. Write for prices on larger quantities.

CONKEY'S EYE REMEDY—This is a new Conkey article, a soothing, cooling application, very grateful to the animal when the eyes are sore or inflamed. Never neglect early symptoms for serious trouble, maybe incurable blindness, may result. We guarantee satisfaction with Conkey's Eye Remedy. Price, 50c, or 55c postpaid.

CONKEY'S HEAVE REMEDY—Heaves is a complicated disorder. The nerves, the digestive system and in advanced cases the breathing organs are all three affected. Trouble usually starts with the digestive system and other symptoms follow from reflex action. Many cases are easily remedied with Conkey's Stock Tonic treatment, which corrects the faults of digestion. Of course, in any treatment, feed and water carefully, so as never to overcrowd the stomach. Never work the horse immediately after feeding.

The real test of a Heave Remedy is a bad case of chronic heaves. Conkey's Heave Remedy acts directly on the weakened digestive organs, tones them up and strengthens the whole nervous system. If directions are followed we guarantee this remedy to be effective, and in every case sell on agreement your money back if you are not fully satisfied with results. Price, \$1.00, or \$1.10 postpaid.

CONKEY'S WORM REMEDY—For horses, cattle, sheep or swine. Almost any vermifuge will drive the harmless worms, but what's the use? It is the larvae of the hurtful, ulcerating worms that sap the vigor of the animal and that should be expelled. This remedy accomplishes the purpose every time. It drives out the worms and leaves the animal free to thrive and enjoy the benefit of his food. This remedy saves annoyance and disappointment. Strictly speaking, no worm is harmless. They are profit sappers every time. There's no use in feeding good feed to worms. Get after them every time with CONKEY'S WORM REMEDY,—the profit piler. Price 50c, or 60c postpaid.

CONKEY'S DISTEMPER, FEVER AND COUGH REMEDY—Conkey's Distemper, Fever and Cough Remedy is for Coughs, Colds, and for all diseases having fever or chills as a symptom. Influenza; Strangles or Distemper; Epizootic; Shipping Fever; and Pink Eye or Cellulitis. Many serious diseases such as Pneumonia, Bronchitis, Founder, and many other inflammatory diseases start simply with a cold. This remedy should always be used in early stages so as to check the disease before it becomes dangerous. Do not run risks but have it on hand for emergency. Prices 50c and \$1.00, postpaid.

CONKEY'S ABSORBENT—This is our special preparation for Spavins, Ringbones, Sidebones, Splints, Curbs, and all exostosis or unnatural bone formations, also for soft bunches, lumps, etc. It is excellent for corns. It is intended principally as an absorbent as its name implies and will not blister when directions are followed closely and application made as directed for allaying fever and inflammation. The remedy will be absorbed, WITHOUT BLISTERING to the extent of taking the hair off, and will reach the seat of trouble and perform its work without the unsightly surface wounds caused by violent blistering and firing. For sprained tendons, sprained ligaments, and all abnormal bone formations, it is the best and surest remedy ever put upon the market. Price \$1.00.

CONKEY'S WARMING LINIMENT—This is a new Conkey article. It is excellent for removing soreness, lameness, swelling or stiffness in any part. It strengthens the muscles and is especially recommended for swenny, or in case of partial paralysis, rheumatism, strains, sprains, etc. Very penetrating and stimulating and eases pain. It is a warming application for any part, very useful in case of sore throat, or lungs, or cold in chest, or for rubbing ears or legs to restore circulation. Price 50c. Not mailable. Express paid, 70c.

CONKEY'S PAIN LOTION—Heat, redness and swelling offer the only evidence of injury that is beneath the skin except, perhaps, lameness. Often the only treatment necessary is to reduce the inflammation and stop the pain. CONKEY'S PAIN LOTION is a harmless, soothing

antiphlogistic that brings immediate relief. Why use a mud antiphlogistic when this is easier of application, cheaper, maintains all the best remedial effects and acts at once? It is soothing to even the tender mucous membranes. It is very penetrating and will find its way to hidden joints and tissues. For Sprains, Curbs, Swollen Knees, and hot and painful swellings, there is nothing equal to it. It is also excellent for rheumatism in man or beast, and will relieve a toothache or headache promptly. Gives almost instant relief as a spray for nose and throat. It is excellent for a thousand ailments on your animals or on yourself. Price, 50c. Express paid, 70c.

CONKEY'S POLL EVIL REMEDY—For Poll Evil and all Fistulas. It is a very humane and effective treatment where most other remedies are barbarous in their application and result in spoiling the animal for future usefulness. Fistulas are not such difficult things to cure and this remedy overcomes them surely and quickly and brings the animal back to absolute health without ruining him for future service. It is an easy method of overcoming malignant and stubborn fistulous sores on any part of the animal. Price, \$2.00, or \$2.25 express prepaid.

CONKEY'S BAG OINTMENT—Dairymen will welcome this special ointment for Sore, Chapped Teats, Cracks and Small Warts, Bunches, etc. It is a penetrating, softening application which soothes quickly. It is very successful in treating Garget, Caked Bag or other inflammation in sensitive parts. Prices 25c and 50c, postpaid.

CONKEY'S FLY KNOCKER—Scientists have proved that many infectious and dangerous diseases are communicated by flies and other insects, which carry the germs and enable them to infect man, beast and fowl. Not only do they spread the germs, but they are a menace and an annoyance to the peace and health of your stock. From the time that the flies first put in an appearance in the spring, until late in the fall, they worry and torment the stock, keeping them irritated and causing them to lose flesh, which is replaced only after loss of time and much extra feeding.

LOSS

CONKEY'S FLY KNOCKER settles the fly problem. We know many worthless articles on the market which have done much to disgust the public and injure legitimate trade. We do not offer the cheapest article known, but the best. It will do just what we claim for it. **AND WE GUARANTEE IT TO SATISFY YOU.** Should it fail to do so, your money will be refunded.

All the time your stock are worried by flies you are losing your profits. Animals can't fight flies and make money for you. You can easily prove this for yourself, simply spray your stock and see the difference in the work they do for you.

CONKEY'S FLY KNOCKER is easy to use, as it is sprayed directly on the animals, or can be applied with a cloth if preferred. It both

PROFIT

kills the flies and drives others away. It will rid your stable of flies and will give the tails a rest. It is positively harmless, and if properly used it will not taint the milk. Sprayed on stock in summer it will prevent lice and grub in winter. Sprayed on your horse before going for a drive it will keep the flies away and prevent the fretting so wearing to a nervous animal. One ounce of liquid will spray two animals. Farmers, dairymen, stablemen and horse-shoers find it too valuable ever to be without it if they once try it. Saves milk, saves flesh, saves spirit, saves time in handling stock. Stablemen find it saves shoes and floors also. The following letter (one of hundreds) comes from East Springfield, Pa.:

"The Fly Knocker we ordered of you came duly to hand and we find that it does all you claim for it. When we began the trial, our cows were covered with flies and their tails were lashing at a furious rate. When we finished spraying the last cow, all tails were as quiet as in mid-winter, having nothing to do. We find upon use, that the knocker not only keeps the flies off the stock, but it drives them from the stable. We would not be without it for five times the cost. M. A. Harrington & Son."

The above is what everybody thinks after one thorough trial. It solves the problem and CONKEY'S FLY KNOCKER stands in a class by itself as a protection against the worst pest of the stable and dairy barn.

The camper could enjoy his outing were it not for the mosquitoes which make camp life miserable. CONKEY'S FLY KNOCKER will also settle the mosquito's bill. It is perfectly harmless, has a pungent odor, and it keeps every insect out of buzzing distance. Prices, 1 quart, 35c; 2 quarts, 60c; 1 gallon, \$1.00; 5 gallons (jacketed), \$4.00. Expressage extra. For price on sprayers, see page 80.

CONKEY'S DISINFECTANT—This is put out as a special proposition to the Sheep Owner and the Farmer and we guarantee it to be a dependable and reliable article. IT IS THE BEST SHEEP DIP KNOWN for the cure of scab and the extermination of Sheep Ticks. It is an excellent remedy for all skin diseases on man or beast; it will exterminate all manner of insects, slugs, ants, and bugs; and is a splendid healer for sores and wounds. It will kill all disease germs and prevent disease about the home, stables or outhouses. IT IS SAFE, as it will not explode or even burn; it is not poisonous when mixed for use, and is not corrosive. It will not curl, burn, or stain the wool when used as a dip, and is not nauseating to sheep or lambs if they swallow some of it while being dipped. Lambs can nurse ewes directly after dipping without harm. It is also very cheap, as 1 gallon mixes with 100 gallons of water to make the ready-to-use emulsion, making 101 gallons for all disinfecting purposes and for the price of 1 gallon of Disinfectant. There is none better for general all-around use. Prices, 2 quarts, 60c; 1 gallon, \$1.00. Expressage extra. Write for particulars on larger quantities.

CONKEY'S PI-NO—A disinfectant for home use, properly called "a breath from the fragrant pines." A delightful article that contains all the qualities of the best disinfectants. Antiseptic, Parasiticide, Insecticide, and Germicide. Fine in the bath and laundry. Refreshing for sick-room use. Makes an excellent gargle for Coughs, Colds and Sore Throat. **PRICES**—7 oz., 25c; 1 pint, 50c; 1 quart, 75c; ½ gallon, \$1.00; 1 gal., \$1.50; 5 gals., \$6.50. Expressage extra.

Sprayers

CONKEY'S PERFECT SPRAYER

A good, dependable sprayer will be found a necessity for using **CONKEY'S NOX-1-CIDE, LICE LIQUID, FLY KNOCKER**, or any liquid disinfectant or insecticide.

CONKEY'S PERFECT SPRAYER, while costing but very little, will be found very serviceable; will spray directly up, or in any direction, and we offer it as the best spray pump manufactured that can be sold for the same price. Price, 50c. each or 75c. postpaid.

GUARANTEE

If at any time, under any circumstances, you buy a Conkey Remedy and are not satisfied with the treatment, you are entitled to have your money back, without question or quibble, on your plain statement that results did not satisfy YOU. Ask your dealer or write direct to The G. E. Conkey Company, Cleveland, Ohio, U.S.A.

Now Ready—Conkey's Stock Book

224 pages, fully illustrated. The best book yet on livestock. See announcement next page how to get this big \$1.00 book

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