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PRICE 50 CENTS.

1895.

TREATISE ON GRASSES.

PRODUCTS OF THE FARM.

STATISTICS,

Etc., Etc.

A SHORT TREATISE

—ON—

Grasses and General Products

—OF THE—

= FARM =

WITH OTHER VALUABLE INFORMATION

—BY—

James J. HENRY GIESE. ✓

BALTIMORE, MD.

1895.

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INTRODUCTION.

**"Sowing weeds is but wasteful toil
They grow like sin in any soil."**

*It is not designed by the author of this **Treatise**, to detract from, or elaborate Scientific theories, but to express in a practical way some plain and well authenticated facts, in reference to **Grasses and other Seeds** of their value and best methods of cultivation, together with kindred subjects pertaining to the farm, compiled with great care, attested by experience and gathered from the best modern authorities, trusting that his efforts may not have been in vain, in the endeavor to embrace within the compass of this little "Hand Book," Valuable information for the Farmer. Among the contents will be found under appropriate headings, the following—*

PREPARATION OF THE SOIL.

ADAPTATION OF DIFFERENT SOILS.

GREEN MANURES AND FERTILIZERS,

THE GREAT VALUE OF GYPSUM (PLASTER.)

Raising Stock, Poultry, etc., etc. Tables of weights and measures, Standard Weights of Seeds. Quantity to be sown to the acre. Statistics of Crops throughout the world, and a variety of other Subjects. Also Advertisements of leading business houses in Baltimore

J. HENRY GIESE.

Baltimore, Md., 1895.

TREATISE ON GRASSES, Etc.

GRASSES.

It is estimated that there are over 3500 varieties of Grasses—included in these are the Edible Cereals, Wheat, Corn, Rye, Oats, etc., altogether forming one twentieth of the vegetable kingdom covering a wide sphere from the Tropics to the regions of perpetual snow. It should never be forgotten that it is just as important to make a careful selection of farm or garden seeds for one's own planting or sowing as if the seeds were grown for sale. The Edible Cereals and grasses cultivated for Hay and Pasturage aggregate the most extensive crops of the world.

COMMON GRASSES ON FARMS.

The judicious cultivation of Grasses for forage, though the least expensive, form a most profitable part of farming, has been much neglected, and many still follow the same methods of buying and sowing practiced by their fathers. In order to be successful the farmer should CONSIDER THE IMPORTANCE OF SECURING GOOD SEED and to cultivate such grasses as are suitable for the soils found on his farm so that every foot of his land, from the driest hillside to the lowest swamp may bring him in an income.

The varieties mostly cultivated are the following, Clover, Timothy, Orchard, Millet, Blue Grass, Red Top and Hungarian.

Study your soil, then pick out what grasses will suit those soils. Plow, cultivate, harrow and roll until the soil is sufficiently mellow: make it rich enough and sow in season, and there will be very little trouble in raising a paying crop. Hay always has a market value and always saleable, whilst on the farm it is indispensable, being an essential part of the farmers' profits and for his stock. One of the great mistakes so often made by farmers is that of following the old line of false economy by being too sparing of the seed, hence he ought not to blame it on the weather if the result is a short crop, "He that soweth bountifully shall also reap bountifully." Tables giving the more modern estimates as to the quantity required to sow an acre will be found in another part of this little work.

Splendid Plan of a Covered Barnyard.

"An elaborate style of covered yard, suggested by the American Agriculturist, New York City, is shown in fig. 6. which is worth considering when the construction of a barn is contemplated.

This provides not only for the required protection both of animals and manure, but affords also an excellent grain chamber where grain can be stored for convenient use. Under the side roofs is also afforded a chance for the storing of small tools and a great variety of articles that are continually in the way when stored about the farm buildings. It also provides splendid protection to animals when housed at night during the summer, this roof protecting them from heavy showers in the night and an excellent opportunity for exercise in the winter, as all the sides, except that toward the south can be protected against cold winds by being temporarily boarded up."

Too much importance cannot be attached to the necessity and advantages of systematic Ventilation of Barns where Stock is housed, and proper drainage about the barn and barnyard.

SILOS, ENSILAGE & SILAGE.

Providing for Stock through the Winter Months is a need perfectly well understood. The Silo is a necessity on every Dairy or Stock Farm. An excellent and practical illustrated work by Manly Miles, M. D., on

How to build a Silo, Ensilage, &c.

Price 50 Cts.

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Baltimore, Md.

AREA OF THE UNITED STATES.

Area, including Alaska (531,409), 3,557,000 square miles.

Greatest length from east to west. 2 700 miles.

Greatest width from north to south, 1,600 miles.

Largest State, (Texas) 265,780 square miles.

Smallest State, (Rhode Island) 1,250 square miles.

Total assessed valuation of property, (Census 1890) \$24,249,-
585,804.

Total wealth, about	\$65,000.000,000
Total population	62,622,250
Male	32,067,880
Native born	53,372,793
White population	54,983,890
Colored	7,638,360
Males, 21 years and over	16,940,311

The ten largest cities, (Census 1890) are as follows: New York, 1,515,301; Chicago, 1,099,850; Philadelphia, 1,046,964; Brooklyn, 806,343; St. Louis, 451,770; Boston, 448,477; Baltimore, 434,439; San Francisco, 298,997; Cincinnati, 296,908; Cleveland, 261,353.

According to the Census of 1890, the 16 Southern States have 15,549,358 whites, and 6,898,806 negroes. From 1880 to 1890 the whites increased at the rate of 23.6 per cent., while the colored people increased only at the rate of 13.1 per cent.

AREA & VALUE OF THE WHEAT CROP FOR 4 YEARS.

Total area, bushels and value of crop in the United States for the year 1893.

ACRES	BUSHEL	VALUE
34,629,418	396,131,725	\$213,171,381
AVERAGE YIELD	AVERAGE VALUE	AVERAGE VALUE
PER ACRE	PER BUSHEL	PER ACRE
11.4 Bu.	53 8c	\$6.2

Average for four years—1890—1893.

ACRES	BUSHEL	VALUE
37,296,975	480,780,681	\$345,882,413
AVERAGE YIELD	AVERAGE VALUE	AVERAGE VALUE
PER ACRE	PER BUSHEL	PER ACRE
12.9 Bu.	71.9	\$9.3

CROP REPORT 1894,

Compiled by the Statistician of the U. S. Agricultural Department, and are presented as follows:

The corn crop of 1894 in rate of yield is one of the lowest on record in the U. S. In the past thirteen years the yield per acre of but one year, namely 1881, was lower, the yield for that year having been 18.6, against 19.4 for the year 1894. Severe drought and high winds in a few of the principal corn producing States reduced the acres harvested for its grain value to 62,582,000 from the 76,000,000 acres planted.

The product garnered is 1,212,770,000 bushels, having an estimated farm value of \$554,719,000

The wheat is above an average one in yield per acre. The entire product for the country is 460,267,416 bushels, which is below the average for the five years 1890 to 1894 inclusive.

The farm value of the crop is \$225,902,025.

The area according to revised estimates is 34,882,436 acres. In the revision of acreage the principal changes have been made in the spring wheat States.

The rate of yield is 13.2 bushels per acre. The average value per bushel 49.1 cents.

The estimates for oats are: Area, 27,023,553 acres; product, 662,086,928; value \$214,816,920; yield per acre, 24.5 bushels.

Rye, area, 1,944,780 acres; product, 26,727,615 bushels; value, \$13,394,476.

Barley, area, 3,170,602 acres; product, 61,400,465 bushels; value \$27,134,127.

Buckwheat, 789,232 acres; product, 12,668,200 bushels; value \$7,043,238.

Potatoes, area, 2,737,973 acres; product, 170,887,338 bushels; value, \$91,526,787.

Hay, area, 48,321,272 acres; product, 54,874,408 tons; value \$468,578.321.

Tobacco, area, 523,103 acres; product, 406,678,385 pounds; value, \$27,760,739.

OCCUPATION OF WOMEN.

In this country, 2,500 women are practicing medicine, 275 preaching the gospel, more than 6,000 managing postoffices, and over 3,000,000 earning independent incomes. Since 1880, the patent office has granted over 2,500 patents to women, and in New York City it is said 27,000 women support their husbands.

WHEAT CROP OF THE WORLD, 1894.

IN ROUND NUMBERS.

	BUSHEL.
United States.....	460,000,000
Canada	48,000,000
Mexico	11,000,000
South America	80,000,000
Europe.....	1,420,000,000
Asia	325,000,000
Africa	38,000,000
Australia....	38,000,000
Grand Total.....	2,420,000,000

1894.

TABLE SHOWING THE AVERAGE YIELD OF CROPS
PER ACRE IN VARIOUS STATES.

	Bus.	Bus.	Bus.	Bus.	Bus.
	Wheat.	Barley.	Rye.	Corn.	Oats.
Maine.....	21	26	—	39	33
Vermont.....	22	27	19	40	32
Rhode Island.....	—	30	16	—	30
New Jersey.....	15	—	14	33	28
Delaware	13	—	11	22	19
Pennsylvania	15	16	13	32	22
Maryland.....	15	—	13	22	21
Virginia	9	—	8	19	12
Ohio.....	19	28	18	26	30
Illinois	18	23	18	—	36
Montana.....	24	—	—	32	40
Wisconsin	16	28	16	—	32

FERTILIZING VALUE OF FEEDING STUFFS.

Gluten Meal	\$15.53 per ton.
Cotton Seed Meal	26.16 “ “
Flaxseed Meal	19.36 “ “
Meat Scrap	35.69 “ “
Wheat Bran	12 30 “ “
Clover Hay	8.00 “ “

Layers of Gypsum (Plaster) spread upon manure heaps will prove a great service of value in retaining the fertilizing properties.

DEEP CULTURE THE BASIS OF IMPROVEMENT IN AGRICULTURE.

The fact is patent to the most superficial observation that the total sum of the vast production of our agriculture, is the yield of an average depth of cultivation of the soil not exceeding six inches, comparatively a mere film of the earth's surface.

All the inorganic matter needed by plants and all other elements of their nutrition and full development that come from the earth, must be supplied within this limit, while all the soil below this depth is unemployed and inert. The roots of the grains and grasses do not ordinarily extend much below the depth cultivated; and the average of this in our country is insufficient either for the protection against drought, for adequate returns for the labor of cultivation. We may not be able to calculate the precise amount of increase in production due to an additional inch in depth of cultivation, but, experiments have shown that in many soils it bears relatively, a near proportion to the increase in depth of culture, so that, where the soil is now worked to six inches, an inch greater depth of cultivation would give nearly one-sixth more production; that twelve inches might be thoroughly pulverized instead of six, may appear difficult to realize, but it is far less so than many results of invention successfully accomplished.

An erroneous impression exists relative to the depth to which the roots of the cereals and clovers, as well as many other plants, will descend in an areated and healthy soil. In ravines that have been filled with surface soil, or wherever the mould is of suitable texture and condition, carrots and parsnips are often found of a length of three feet or more; clover roots from three to six feet, and instances have been given of as great length of the roots of wheat and oats. In very compact soils, wheat roots so near the surface as to be thrown out by the mechanical displacement of freezing and thawing, if not utterly destroyed, they struggle fruitlessly to pierce the unbroken subsoils, worthless for seed and of little value for bread. The drill planting the seed firmly in the earth instead of scattering it on the surface, already saves half the winter killing in the fields where it is used; and deep culture with proper drainage, would procure exemption from most of the remaining liabilities, and, ordinarily from all danger of loss from drought. The advantage of additional depth of pulverization, therefore, would often be far greater than the proportionate increase of depth, and the profit of the improvement would be increased in corresponding ratio.

CUTTING CROPS TOO EARLY.

It is well worthy of the farmers attention, that harvesting before the plant is fully ripened and fully matured, excepting for green feeding is not according to nature and liable to damage the value of seed, grain, hay and straw. This remark is especially applicable to Tobacco, the market value of which, depends so largely upon the quality of the leaf.

THE VALUE OF DEEP ROOTING PLANTS.

Mr. R. H. Elliot, of Clifton Park, Kelso, Scotland, writes to the *Scotsman*:

I am now convinced, and have practically proved from experiments here, that the main cause of grasses declining in the third year is really owing to the physical deterioration of the soil rather than to deficiency of manurial matter, and that if the soil if continuously cultivated and areated through the agency of deep rooting plants, no decline will take place. This view as to the relative importance of the physical condition is confirmed by Sir John Lawes, who, after an immense course of experiments as regards grasses, tells us that his experience tended to show that "it is the physical nature of the soil, its capacity for holding water, and its permeability to roots, that are in most cases, of greater importance than its more strictly speaking chemical composition." (Vide p. 1222, Part II., of "Agricultural, Botanical, and Chemical Results of Experiments," by Sir John Lawes)

Something for Every Farmer.

AN ILLUSTRATED CATALOGUE CONTAINING OVER
500 STANDARD WORKS.

An extensive and complete list of valuable works and cost of—embracing every branch of farming industries, Horticulture, Stock-raising, Sheep, Horses, Hogs, Poultry, Bees, Architectural designs for Country Homes, Barns, Sportsmen, Game, etc., etc.

Price of Catalogue, 25 Cts., Postage Paid.

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P. O. Box, 693.

BALTIMORE, MD.

TRIFOLIUM.

RED CLOVER.

Of all the different varieties, Red Clover (the old stand by) takes the lead. Hardly any good farmer can afford not to have several good clover fields. Even the little Bees know that there is "much honey" in the clover blossom from which they can gather a rich harvest to fill their Barns. It may not be saying too much that it is the most valuable crop on the farm. It makes the most nutritious Hay, excellent pasturage, and most nutritious food for stock. Clover Hay will always command a fair price on the market, it may be cut for Hay or pastured. The second crop is cut for seed. As a fertilizer and for restoring worn out land, it is very valuable, considering the cost of raising, and the money value, compared with the edible cereals, it is a dependable crop. The yield can be largely increased by the liberal application of Plaster. The great value of Plaster is fully set forth in another part of this work. Stack your seed clover in the field and thrash it there. Take cold weather to thrash it out. It thrashes better out of the hull. Only clean heavy seed will command a good price.

Quantity sown to the acre 15 to 20 lbs. Usual time for sowing is early in the spring or in the fall.

LUCERNE OR ALFALFA CLOVER.

Alfalfa is another valuable variety, but being more difficult to get a good stand than any other variety is not extensively cultivated. It is claimed that as a fertilizer it has no equal. The roots go down very deep 8 to 10 feet and on this account highly valuable. Alfalfa requires a deeply worked dry mellow loamy soil, does well and will succeed well on dry loam land. Yields a heavy crop of hay the second year after seeding. A wet soil is not at all suitable. Alfalfa honey is saleable in large quantities. Sow 15 to 20 lbs to the acre.

SAPLING OR MAMMOTH CLOVER.

As is generally known this variety attains the height of four to six feet, will stand more hardships than most other varieties and grows on land where the Red clover fails, it matures later and is valuable in mixtures for mixed hay. The seed is taken from the first cutting. Time for sowing is either in the spring or fall. In common with other clovers it is highly esteemed as an excellent fertilizer plowed under for exhausted land. Quantity required for sowing an acre 15 to 20 lbs.

CRIMSON CLOVER.

This variety of Clover is comparatively new in the United States. It is an annual. It will grow in any soil where Red Clover succeeds and flourishes even in poor soil. In sandy and light soils, by the application of Plaster, the yield may be increased 25 to 50 per cent. Can be sown from June to October, but in general, if sown at the last working of corn, it succeeds best and can be pastured in the fall and again in the early spring, without material detriment to the crop. It ripens toward the end of April or early in May; produces 2 to 3 tons of hay to the acre and can be cut several weeks earlier than Red Clover. It has become quite popular and gained much confidence with all who have tried it. Valuable as a Fertilizer or for Pasturage, Hay and Seed. By actual experiment it is proven, that the value of one acre's crop as a fertilizer, is equal to thirty dollars worth of stable manure. It can be sown with Buckwheat thus making two crops. In some latitudes, there is no reason why a double crop in like manner may not be obtained by sowing with it oats, wheat, etc. Crimson clover sown with Rye, fifteen pounds to the acre. The rye cut green will make a long crop of hay on good land, by August. It makes most nutritious hay, sow 15 to 20 pounds to the acre. A full description with testimonials can be obtained by addressing the author of this work P. O. Box 693, Baltimore Md.

ALSIKE OR SWEDISH CLOVER.

Alsike is the most hearty of all clovers, stands severe cold and does wonderfully well in very dry or wet weather. The yield is large, the growth rapid, and it may be cut several times during the season. It makes a solid thick bottom with a large yield of hay. Stock eat it with considerable preference, and is regarded by many farmers as more profitable than the Red Clover. The seed matures with the first crop, whilst it does not perhaps make as much hay per acre, the finer quality makes up for the difference. Stands drought admirably and will crowd out a great many noxious weeds, it makes a good change of crop. This variety of clover has fibrous spreading roots and should be sown on well drained land. It will not grow at all on a stiff wet clay soil.

Alsike produces more sweetness for the Bees than other descriptions, in this respect excelling white clover for which so much is claimed. It is growing in favor very rapidly as being a very valuable crop for the farmer. Sow 8 to 10 lbs. to the acre.

WHITE CLOVER,

White or Dutch Clover is the most delicate of all the "Trifolium" family. Sown with Blue Grass, it is most desirable for permanent pastures and especially for lawns.

TIMOTHY.

Timothy, as every farmer knows, makes the best Hay, most relished by Stock and always commands a higher price than any other description, generally \$2 and more per ton, than clover or mixed Hay. Timothy seeded on Timothy sod will not prove a success. Cutting too close is not wise. The common practice of cutting so close when mowing, renders more than two crops unprofitable. By avoiding cutting too close to the ground, with the addition of fertilizers each year, three or four good crops may be secured. The high price of Timothy seed for the past few years affords promise of good returns, estimated by experienced farmers—including the Seed and Hay—\$16 to \$18 per acre. The soil best adapted for Timothy is a loamy moist soil. Some claim that this crop is more exhaustive to the soil than other grasses. Possibly this is due to the fact that the roots do not descend so deep, but this objection might be greatly overcome by deeper plowing. Sow half a bushel or more to the acre.

RED TOP.

Red Top is useful for moist soils where the land is liable to inundation. It will do well in cold latitudes. Resists drought, produces a large yield. May be used to advantage in mixtures for pasturage, and to a limited extent may be used in Lawn grass. It is grown extensively in the New England States for Hay and considered valuable. The cost of seed is not dear, and in this respect has some attraction. Sow to the acre 2 to 3 Bushels.

BLUE GRASS.

Blue Grass is the pride of the Kentucky farmer. The fertile soil, producing vast fields counted by miles of rich pasturage, for great herds of cattle and feeding millions of sheep. It can be cultivated in any part of the United States. It makes the most durable pasturage, and mixed with White Clover it makes a fine mixture for lawns. In dry soil, with some shade, it flourishes to the greatest advantage. Sow to the acre for lawns, four bushels. For pasture, with Alsike, White Clover and Red Top $1\frac{1}{2}$ bushels to acre, or if sown alone, 3 bushels.

ORCHARD GRASS.

Orchard Grass is held in high esteem as a green crop and is cultivated in some sections of the country very extensively. It is much relished by stock, and whilst it comes early in the spring it also lasts until late in the fall. Thick stalk and rather a rough growth, is not suitable for either pasturage or lawns, but may be sown with sapling Clover for Hay. Sheep thrive well on Orchard Grass and it may be grown to advantage in orchards, etc. Sow 2 to 3 bushels to the acre. It is best sown in the fall than with oats in the spring.

GERMAN MILLET.

German or Golden Millet is a favorite forage plant, will do well in almost any part of the United States, is quite a beautiful growth. Stock eat it readily. Cut green when full grown or when fully ripe cut for hay. Sow $1\frac{1}{4}$ to $1\frac{1}{2}$ bushels to the acre. Millet is a good catch crop, if a hard winter has preceded and fall crops injured, or too late for planting corn.

HUNGARIAN.

Hungarian is another valuable plant for forage or soiling not as rank growth as Millet. Sown end of June will produce an excellent green crop. Sow 1 to $1\frac{1}{2}$ bushels to the acre.

BUCKWHEAT.

Buckwheat is a fairly profitable crop does not require a very rich soil. Owing to its gathering moisture rapidly, it ought to be thrashed as soon as it is dry. Sow end of June one bushel to the acre.

POTATOES.

With the advance made in Agriculture, this commodity is worthy of some mention as being an important factor in the culinary department, and menu of Prince and Peasant—Deep culture enters into the calculation very largely, 9 to 12 inches to obtain a big crop, as the roots descend 20 to 25 inches below the tubers. In the state of "Maine," famous for good potatoes, 600 to 800 bushels per acre is quite common.

BARLEY.

Extracts from the Maryland Agricultural Experiment Station.

BARLEY AS A SUBSTITUTE FOR WHEAT.

As many farmers are casting about for something to take the place of wheat because of the extremely low price which that cereal now commands, (there being little or nothing left after paying all charges attending its raising,) it was deemed advisable to make an experiment with barley comparing it with wheat as to the profits of each. One advantage which the substitution of barley for wheat would have, is the fact that it would necessitate no change in the rotation of crops, as the barley would for all practical purposes on the farm take the place of wheat, and is seeded at the same season of the year. Those who have tried it recommend it as an excellent feed for cattle, horses and sheep; and the straw while not making as heavy a growth as wheat, is said to be eaten with relish by cattle.

TABLE X.

SHOWING COMPARATIVE YIELDS OF WHEAT AND BARLEY.

	BUSHELS PER ACRE.
3 one-half acre plots of Wheat averaged.....	36.7
3 one-half acre plots of Winter Barley averaged.....	50.5
1 one-half acre plot of Spring Barley averaged from 2 and 6 rowed varieties.....	27.7

TABLE XI.

COMPARATIVE PROFITS OF WHEAT AND BARLEY.

ACRES OF GRAIN.	YIELD PER ACRE.	VALUE PER BUSHEL.	GROSS RECEIPTS.	COST OF RAISING.	NET RETURNS.
1 Acre of Barley.....	50.5	\$.55	\$27.78	\$15.15	\$12.63
1 Acre Wheat.....	36.7	.55	20.19	14.68	5.51

This is a matter well worth the consideration of farmers, who frequently fail, as has been previously stated, in securing a good set of grass, which lies at the foundation of a successful husbandry; and every opportunity should be taken advantage of, which has for its object the accomplishment of this *the most important feature* in the rotation of crops.

WHEAT.

Of late years there appears to have been less attention paid to the selection of Wheat for seed, and as a consequence it may be said the average quality is scarcely up to the standard of former years—whilst the price has declined to a point unprecedented, bordering on 50 cts. per bushel, with family flour to \$3.00 per barrel. It is within the recollection of some that may read this article, when wheat brought \$3.00 per bushel and family flour \$12 per barrel. Several causes may occur, which whilst wheat may never again reach \$3.00, the normal price and basis, of value running through periods of 30 to 50 years, \$1.00 to \$1.25 may be restored. Diminished production, drought, or famine may produce this result, without any necessity to discover other uses for wheat, than for bread.

Considering the fact that the cost of raising wheat in the vast fields of virgin soil in the western part of this country, where steam machinery for farming takes the place of manual labor. If the low price of wheat continues to rule, Eastern farmers may find it more profitable to turn their attention to other crops, and to raising stock; this is the more appreciable since the "Argentine Republic" has become such a formidable competitor in European markets for the surplus wheat raised in the United States.

THE LOW PRICE OF WHEAT.

Many theories have been advanced in regard to the low price of wheat. The price has never before been so low in this country. The lowest point reached in Chicago was about 52 ½ cts., whilst it was selling at about the same figure at the same time in New York and Baltimore, presenting an abnormal condition of things never before witnessed. With a corresponding abundant supply of money, and in the midst of such great plenty for so long a period, there has existed a feeling of distrust, discontent and unrest, not only in this country, but in many other countries accompanied with stagnation in trade in every direction. Any theories attributing the low price at which wheat has been selling the past two years to Tariff, Silver Legislation, Reciprocity Treaties, or Politics, is simply a delusion, the peculiar position of wheat is obvious to every intelligent observer. The solution is in one word, *overproduction*.

We have just to get back to first principles, and understand that the old established firm "Messrs. Supply and Demand," have now as through all the ages regulated the price of all commodi-

ties. It is a question for the economist to determine, whether the low price of wheat will continue.

The above mentioned distrust, doubtless tended to restrain trading, and in some measure to depress prices and cheapen all the necessaries of life.

May it not be possible that a wise and merciful Providence so ordered abundant crops throughout the world for just such a time as this—who can tell?

A notable and anomalous state of affairs was experienced in the Baltimore market during the month of August, 1894, when for some two or three weeks, the price of Wheat, Rye, Corn and Oats, were all selling within the same limits—viz : between 50 and 60 cts. per bushel. Prior to the great inventions and improvements in farming machinery, so materially reducing the cost of production, wheat was the great factor as a sort of basis of trade, when the normal price was \$1.00 to \$1.25 per bushel, and in relative proportion Rye was 65 to 75 cts., Corn 35 to 45 cts., and Oats 25 to 30 cts. A great question now occupying a prominent place in the minds of many wise heads is: In what other ways can wheat be employed? Experiments have been made in order to make this discovery. In France they have found feeding horses on bread very profitable and a similar result has been realized in in this country in feeding wheat to stock. Wheat Bran makes a valuable fertilizer. Further experiments may discover other uses yet to be developed.

GRASSES FOR PASTURAGE.

Red, White and Alsike Clover, Blue Grass, Timothy, Rye Grass, Red Top, Crested Dogs Tail, Creeping, Bent, Meadow Fescue, Sweet Vernal and Yellow Oat Grass, are all desirable for pasturage mixtures, rendering the product palatable and healthful for stock. It should be borne in mind that in order to have good pasture, you must sow plenty of seed.

No. 1				MIXTURES.		No. 2		
Red Clover,	-	-	Lbs.	5	Blue Grass,	-	Lbs.	16
Alsike "	-	-	"	3	Red Top,	-	"	4
White "	-	-	"	5	Timothy	-	"	4
Blue Grass	-	-	"	14	Sweet Vernal,	-	"	1½
Sweet Vernal,	-	-	"	1	Red Clover,	-	"	6
Red Top	-	-	"	3	White "	-	"	5
Rye Grass,	-	-	"	2	Alsike "	-	"	2½
Timothy,	-	-	"	7	Rye Grass,	-	"	2
				40			41	

GREAT VALUE OF GYPSUM (PLASTER.)

The chemist tells us that Gypsum has remarkable and some subtle properties as a manure as an absorbent and is also an excellent disinfectant. The low price at which it can be purchased places it within the reach of every farmer. The author of this work has had a large experience in reference to plaster—both as to the different kinds of Gypsum—having been the largest importer in Baltimore of this article more than fifteen years prior to 1889 and shipped large quantities in the rock and also ground ready for use, to many points in the states of Pennsylvania Maryland and Virginia. By testimonials from all sections there was abundant evidence of its great value, from the highest authority and experience of successful farmers in this country. During the past five years in consequence of the small margin for profit in grinding plaster, and the use of plaster for farming purposes has been *very greatly neglected*. The Nova Scotia Plaster is superior to any yet discovered. The analysis of Plaster from the best quarries as shown by eminent chemists gives the analysis—75 to 98 per cent. Sulphate of Lime.

Prof Caldwell, of Cornell University, says: “Plaster is Sulphate of Lime or Sulphuric Acid united with a small quantity of water in contact with Carbonate of Ammonia. Under certain conditions both of the compounds are decomposed and Carbonate of Lime and Ammonia in Sulphate are produced which retains its Ammonia and allows no escape. Therefore, if we convert the Ammonia in the Sulphate as formed we may prevent the loss of a most valuable constituent of the manure of our barnyard and the decomposed matter in our soil. It is, in fact, upon the action of these two substances on each other that Plaster fixes Ammonia. There is no doubt that Plaster does serve this purpose when used freely upon our soil.”

It possesses some subtle properties, is regarded as useful as a manure and claimed by some as acting chiefly by itself in affording nutriment to the plant and being an absorbent it fixes the Ammonia of the atmosphere and is conveyed to the roots. Very large results have been realized by the application of Plaster to clover and pasture fields—it proves advantageous on all crops. A liberal quantity—say 400 pounds or more to the acre will prove very efficacious. Results in clover alone has produced a yield of 25 to 50 per cent. more on the sameland than where Plaster had not been used. Where commercial fertilizers are used it is of great value in supplementing and pro-

ducing more lasting benefit. It is of great value when used upon the compost heap, preventing the escape of the Ammonia, beneficial around the barnyard, and being a disinfectant, of great advantage if sprinkled in the stalls of stables.

The cost of this fertilizer is within the reach of our most humble farmers, and a few dollars invested in it cannot fail to improve the crops and prove to the farmer or gardener a large reward for the investment. The genuine "Nova Scotia Plaster" with full directions for applying it, may be obtained from J. Henry Giese, P. O. Box 693, Baltimore, Md.

CORN.

The *Farmer* says :

"While many of the most successful farmers differ as to the proper time for plowing, planting and cultivation, we are inclined to think that the differences arise more from locality and the kind of soil than from any general facts. Plowing and planting should be done as early in the spring as the weather and condition of the soil will permit. The soil should be plowed to the greatest depth possible, and thoroughly pulverized. If barnyard manure is applied, it should be hauled out and spread over the ground several months previous to plowing, and all fertilizers should be broadcast and plowed under, so that none is lost from the soil.

"After the planting if the surface bakes or becomes hard by reason of the high winds and hot sun that this locality is somewhat subject to in the month of May, a light harrow should be run over the surface about the time the young corn is breaking through the ground. This process not only permits the air to permeate the soil, but it destroys the germs of many weeds.

"There is no absolute rule as to the number of times growing corn should be worked, but four times is none too many. The intelligent farmer soon learns that more crops are impaired by too little work than there are by too much. No part of the work in the cornfield requires more care than the weeding out of surplus stalks. Great care should be taken that the stands of stalks should not exceed twenty inches in drilled corn, or more than two stalks to the hill in checkered planting, or thirty-two stalks to the square perch.

"The rough, cold, rainy or snowy days of winter may be spent to advantage indoors. The seed corn is to be selected, if it was not done in the field when gathered, as it should have been. Choose long, thin ears with deep, long, narrow grains. Such corn

will ripen early and will yield from fifty to sixty bushels of shelled grain to the acre, and if the corn is planted in drills, with stalks fifteen inches apart in the row, eighty or ninety bushels can be grown to the acre on deep, rich, well-worked clover soil.

"The corn should not be shelled off the cob, as it gathers moisture when shelled and kept in bulk. It should be shelled by hand a few weeks before planting "

OATS.

It is somewhat a remarkable fact that the Oats raised south of Pennsylvania are as a rule rather poor quality. There must be some cause for this, and it may be traced to two sources—indifferent quality of the seed sown, lack of cultivation, or both. The practice of sowing clover with Oats is not advantageous; if Oats are cut green, before July, clover may be sown and with favorable weather will give good results—very much depends upon the preparation of the ground. Oats require a thoroughly *worked* mellow soil. They should be sown before the middle of April, in fact as early as the condition of the ground and weather will admit. Secure good seed, sow not less than two bushels to the acre, and *always sow with the drill*. If soil is poor, apply 100 to 200 pounds of some good fertilizer. Sown broadcast requires three bushels to the acre.

CATTLE AND ROTATION OF CROPS.

ON A SMALL DANISH FARM.

REPORT OF AN AGENT OF THE UNITED STATES AGRICULTURAL DEPARTMENT.

"The cows were fed as follows: At 6 a. m., a feed of straw, which they ate while the milking proceeded. Next, a feed of moistened chaff made from barley, oat or wheat straw, mixed with the grain feed. The grain feed consisted of two pounds of sunflower cake and two pounds of bran. When this was eaten, they were watered, and, after their water, they had a feed of hay.

"In the afternoon, about 3 o'clock, each cow got a feed of fifty pounds of roots, mangels or carrots; at 4 p. m., again moistened chaff and grain. This time the grain consisted of one pound of rapeseed cake and three pounds of equal parts of barley and oats ground together. Then they were watered. Next followed a feed of hay and barley, about 6 p. m. a feed of straw. See that your stock has plenty of shade.

SYSTEM OF ROTATION.

“Their system of rotation was as follows : First year, fallow, which was plowed several times and manured, and in the fall sown to wheat. They seeded very heavily, using seed wheat at the rate of two and a half bushels per acre. The yield of wheat, one year with another had for several years averaged fifty-five bushels to the acre. Second year, wheat ; third year, barley ; fourth year, mangels and potatoes, and a soiling crop consisting of oats and vetches sown together, the three occupying nearly equal areas : fifth year, oats, which were sown at the rate of four bushels to the acre, and yielded, on an average, upwards of eighty bushels to the acre. The oats were sown with grass and clover. Sixth year, grass used for pasture and hay ; seventh year, grass used for pasture and hay, which ended the rotation, the pasture being broken in the fall of the seventh year and followed by fallow.

STOCK RAISING.

From the present outlook, it is quite apparent that the time has come when the farmers east of the Alleghanies will have to consider the question of turning their attention to other industries than raising wheat ; to the cultivation of other crops or of raising stock, as being more dependable and remunerative sources of revenue. It has been urged that beef cattle cannot be advantageously raised in the Atlantic states ; this, however, remains to be demonstrated by a fair trial in this direction. The experience of many farmers in the eastern states has proven that raising sheep, especially, pays a good profit—the same may be said to some extent in regard to swine.

A more liberal policy on the part of our Government toward foreign countries, would undoubtedly open up good markets and afford greater opportunities than ever before, for the exportation of Cattle and also Pork. As to Sheep, it is reasonable to conclude that there will soon be a return to more prosperous times and this will be followed, by a large demand for wool and American fabrics. As a new departure, an important feature and chief consideration in regard to this subject, everything depends on the selection of the *best breeds*. A valuable work on “Stock breeding, etc.” by Manly Miles, M. D., price \$1.50, postage paid, can be procured by addressing the author of this Treatise, P. O. Box 693, Baltimore, Md.

CARE OF HORSES.

Keep your harness soft and clean, particularly the inside of the collar and saddle, as the perspiration, if allowed to dry in, will cause irritation and produce galls.

The collar should fit closely, with sufficient space at the bottom to admit your hand ; a collar too small obstructs the breathing, while one too large will cramp and draw the shoulders into an unnatural position, thus obstructing the circulation.

Never allow your horse to stand on hot, fermenting manure, as this will soften the hoofs and bring on diseases of the feet, nor permit the old litter to lie under the manger, as the gases will taint his food and irritate his lungs as well as his eyes.

Do not keep the hay over the stable, as the gases from the manure and the breath of the animal will make it unwholesome.

Kindness will do more than brutality ; therefore, do not use harsh language to your horse. or lash, beat, or kick him. Bear in mind that he is very intelligent and sensitive, a willing servant and deserving of your kindest treatment and thought.

Remember that horses are made vicious by cruel treatment ; that it is speed which kills ; that more horses are lame from bad shoeing than from all other causes ; that a careless application of the whip has blinded many horses ; that more fall from weariness than from any other cause, and that no animal should ever be struck upon the head.

FEEDING CARROTS TO HORSES.

Those who look careful after the health and comfort of their horses will not neglect to give them a few carrots occasionally during the cold weather. They are greatly relished by the equines, whose fondness for the roots can easily be understood when it is known that they come nearer to supplying the place of green grass than any other food obtainable at this season. Moreover, carrots are considered equal in nourishment, pound for pound, with oats. Only a few, cut up and mixed with other feed, will improve the appetite and assist digestion, thus helping materially to keep the animal in good condition.

POULTRY.

There are no dull times for the poultry and egg business, for there is not a month in the year that a ready sale cannot be made for all that may be offered, and as eggs are always sold for cash, which lessens the liability of loss, it is a claim in favor of the poultry industry which does not apply to all branches of business. We doubt if anything raised on the farm pays better than poultry, or offers a greater certainty of allowing a profit to be secured.—*Farm and Fireside.*

RULES OF POULTRY KEEPING.

PASTE THEM ON THE HEN-HOUSE DOOR FOR REFERENCE.

1. Gather the droppings of the hen house every morning.
2. Sprinkle air-slacked lime over the roost platforms and around the house after each cleaning.
3. During the summer season pour kerosene over the roosts every week.
4. Scald the drinking fountains once a week.
5. Fumigate the interior of the houses every month by burning sulphur in them.
6. Whitewash the inside of the buildings every spring and fall.
7. Have a scratching pen to each hen house, and keep this filled with chaff and leaves, among which scatter the grain at noon and night.
8. Keep the fowls exercising; do not let them become over-fat.
9. Keep heads of cabbage hanging in the hen house during the entire winter.
10. Do not expose the stock to winds, snow or rain any more than necessary during the change of seasons.
11. Have the house warm and comfortable.
12. Do not overcrowd.—*Mass. Ploughman.*

METHOD IN FEEDING HENS.

AN UNLIMITED SUPPLY WILL MAKE THEM FAT TO NO PURPOSE.

It is a source of complaint that the large breeds eat more food than the smaller ones and do not give as good results in eggs. This depends, however, upon how they are fed. If the food is placed before them in unlimited supply, so they can eat their fill, there will be but one result—excessive fat.

VENTILATOR IN THE POULTRY HOUSE.

A new poultry house has for its ventilator a stove pipe going out at the peak of the roof, and coming to within three feet of the floor, where it rests on three iron rods. In this pipe is a damper by which the draught may be regulated. Under it is four square feet of brick pave, with a border of brick laid on the side. On this fire can be built.—*Ledger*.

MENU FOR THE CHICKENS.

BREAKFAST :

Potatoes, apples, and other cooked vegetables, seasoned with salt and pepper, thickened with cornmeal.

DINNER :

Wheat, oats and rye ; chopped onions.

SUPPER :

Cracked corn.

Sunflower seed three times a week is one of the best producing foods. Give them clean, fresh water, and scatter leaves, straw, etc. in the barn-yard and chicken-yard where they are fed, so that the fowls will be obliged to "scratch" for their grub, and thus work for their living and be kept healthy by open air exercise. **THERE IS MONEY IN THIS BUSINESS.**

THE ROTATION OF CROPS.

One cause of weeds flourishing on some soils is that they thrive on plant foods left over by the grain crops, a condition which renders the soil impoverished for other grain crops, yet very fertile for weeds, because the weeds are able to get a good start, make rapid growth, secure abundant moisture below the surface, and deprive the land of that which was not utilized by the crops, the result being that the soil is still further impoverished. This may be prevented by growing root crops after corn, to be followed by clover or some grass crop.

No two crops of the same kind should be grown on the land in succession, and a crop that is sowed or drilled should be followed by a planted crop the next year to keep the soil clean. Wheat, corn, oats, potatoes, corn and clover, followed by wheat again is a rotation practiced by many progressive farmers, but turnips, carrots, beets, cabbage, millet and peas or beans are added to the list whenever it can be done with advantage.—*Columbus Rural World*.

Lime as a Fertilizer.

Lime whilst highly beneficial to the Soil for most crops—it is not strictly a fertilizer, in the sense of affording food for plants; but possesses properties of great value, being a great factor in neutralizing acids and very essential on what is commonly called sour land. Limestone or Mineral lime often contains Magnesia and other impurities. Oyster Shell lime on the other hand, is free from all impurities, contains pure lime, with a small portion of phosphoric acid, which is valuable. Lime ought never to be plowed in, it is most useful near the surface. No harm to mix with manure, it exerts a chemical influence in the decomposition of organic vegetable matter, manure, etc. It is highly beneficial on clay or heavy soils. Oyster Shell lime is used extensively and can be obtained in Baltimore, at about one-third the cost of mineral lime. Forty to one-hundred bushels to the acre; is what is generally applied.

WHERE ARE THE FARM TOOLS.

Are the cultivators, harrows, rollers, plows and farm machinery under shelter, or are they scattered over the farm? Implements exposed to alternate sun and rain will not last half as long as if taken care of.

SUN=FLOWER.

There are several varieties of Sun-Flower in N. A. ; it is cultivated all over the world. In Southern Europe it is raised for feeding Cattle and Poultry—the N. A. Indians make bread of the seed. It is valuable for medicinal purposes. Oil is made from the seed, the stalks can be manufactured into paper, which has been proven by experiments made in this direction. Of late years many Farmers have a patch of them for their Poultry. “*Helanthus Annuus*,” the common Sun Flower grown in our gardens, is a native of Tropical America, where it attains the great height of 15 to 20 feet, the flowers measuring 1 to 2 feet in diameter.

An amateur, who has given the subject considerable attention, gives the following directions for cultivation: It is cultivated very much like corn. with this difference, that the rows should be wider apart, say $4\frac{1}{2}$ to 5 feet—the stalks planted about 5 feet apart, the ground to be well fertilized or they do not produce well, two shovels full of stable manure should be mixed with the earth before planting—as soon as it makes its appear-

ance, thin out to one stalk, hoe, plow and work same as corn; it grows more rapidly than corn. The best variety is the "Russian seed." The best quality seed can be obtained by addressing J. Henry Giese, P. O. Box 693, Baltimore, Md.

ABOUT BEES.

Syrup, prepared by using equal parts of granulated sugar and water, if fed in time for the bees to properly seal it, is as good winter food as most fall honey, and better than some. The water need not be hot, but at the temperature ordinarily drawn. To use, put it in a jar or can, cover with two or three thicknesses of cloth, and invert in a plate or dripping pan. The syrup will be taken up by the bees and stored in cells as fast as it comes through the cloth. Of course, the feeder must be set on the frames, above the cluster. I sometimes in the early spring select old perfect combs, lay them flat on top of the frames and pour the syrup into them.

Honey from alfalfa clover can now be purchased by the ton. How soon the same may be said of Alsike clover honey no one knows. But it is quite evident that the honey of the future will be gathered mainly from some one of the many species of clover, the king of honey-producing plants.

It is impossible to raise a good crop of peaches without bees and plenty of them near at hand, where they can visit the peach trees during the flowering season and perfectly fertilize the bloom. There is no perfect fertilization without the aid of the honey bee.

A LAND REST.

A complete rest is not desirable for land any more than it is for men or for the domestic animals. The best use of land that has been worn by too long continued culture is to put on it some crop grown that will bring to it an increase of fertility by the benign influence of the atmosphere. This is grass or clover. The one contributes to the soil a large quantity of decaying matter in the roots and herbage, and the other, in addition to these, brings from the air a large quantity of new plant food in the form of nitrogen, otherwise entirely unavailable. This is skillful culture of the soil. The other is unskillful waste of it.

THE ATMOSPHERE.

Very few persons have carefully studied or given any particular consideration concerning the constituents and influence of the

Atmosphere which surrounds the Globe as essential of its importance in sustaining animal life and affording nourishment to the whole vegetable kingdom. Some estimate of its mighty power for good or evil may be formed by renewing the analysis furnished by the chemist from which we learn that in the composition of 100 volumes reveals the component parts to be as follows :

Nitrogen, 79.02.

Oxygen, 20 94.

Carbonic Acid .04.

100.

Traces of other substances which are not definitely defined—ammonia and ammoniacal salts—are found, and these dissolved by rain, furnish food to vegetation for producing fruit and flowers. Plants derive food in liquid form inhaled as through the lungs, and exhaling a great deal of moisture or invisible vapor. The sun-flower exhales 3 pounds in 24 hours.

Thirty miles above the earth's surface the Temperature is 100° below zero—rather cold for comfort even in summer.

THE EARTHWORM'S USES.

The earthworm performs a very important part in the economy of nature. He does more than the ploughshare to disturb the latent heat and moisture of the earth and to bring them to the top soil to vitalize and invigorate the struggling roots of vegetation. But for him great stretches of the western agricultural lands would become vast deserts. Therefore, all hail to the earthworm and bad luck to the man who thinks he is fit only for fish bait !

WEIGHTS, ETC.

BUSHEL MEASURE BY WEIGHT.

Bushel.	lbs.	Bushels.	lbs.
Clover Seed	60	Rye	56
Timothy Seed	45	Oats	32
Flax Seed	56	Barley	48
Hemp Seed	44	Irish Potatoes	60
Blue Grass Seed	14	Sweet Potatoes	56
Millet	50	Beans	60
Hungarian	48	Turnips	56
Orchard	14	Buckwheat	48
Red Top	14	Peaches, Peeled	40
Wheat	60	Peaches, Unpeeled	32
Shelled Corn	56	Dried Apples	28
Corn in the Ear	70	Onions	56
Peas	60		

MEASURES, ETC.

Table of Distances.

An acre contains 4,840 square yards. 209 feet long by 209 feet broad is 1 acre.

A mile is 5,280 feet or 1,760 yards.

A league is 3 miles.

A fathom is 6 feet.

A cubit is 2 feet.

A span is $10\frac{7}{8}$ inches.

A hand is 4 inches.

A palm is 3 inches.

A space is 3 feet.

A knot or nautical mile is 6,086 feet.

A statue or land mile is 5,280 feet

A knot is therefore equal to 1.52664 statue mile.

Length Measure,

12 inches make one foot.

3 feet make 1 yard.

2 yards make 1 fathom.

$16\frac{1}{2}$ feet make 1 rod.

4 rods make 1 chain.

10 chains make 1 furlong.

8 furlong make 1 mile.

3 miles make 1 league.

Square Measure.

144 square inches make 1 square foot.

9 square feet make 1 square yard.

$30\frac{1}{4}$ square yards make 1 square rod or perch.

40 square rods make 1 square rood.

4 square roods make 1 square acre

640 square acres make 1 square mile.

HOW TO SIZE UP THINGS.

There are thousands who do not know, for instance, that a size in underwear is two inches; in a sock, an inch; in a collar, half an inch; in shoes, one-sixth of an inch; in trousers, one inch; in gloves, a quarter of an inch, and in hats, one-eighth.—*New York Herald*.

SHEEP.

SHEEP HUSBANDRY OF THE ANCIENTS, ETC.

A lamb has always been employed as a type of innocence. The fable of the Lion and the Lamb on the banks of the brook, illustrates how the little sheep is regarded as rather an ignorant little animal, when the king of the forest protested against the little ewe that was quenching its thirst lower down the stream with the pretext that it muddied it.

According to the Book of Genesis, the sheep was the first of the animals domesticated by man—we are told that Abel was a keeper of sheep. Symbolically and otherwise, sheep are mentioned in the Scriptures more than 200 times. During the reign of King Saul, in one of the great battles, 250,000 sheep were captured and taken from the enemy.

There can be little doubt but that raising sheep was a chief industry in ancient times. It is of very little account to the farmer to hear about free wool connected with politics, but it is a question with them whether they shall be importers or exporters of wool—to say nothing of home trade. Since wool enters so largely in the manufacture of such a variety of fabrics, very many of our farmers are already giving their attention to this industry.

Says the *Germantown Telegraph*:—A mixture of Oats and Canada field peas give the best results for sheep feeding. The stalks of the oats serve as a support to the peas and the oats give a comparatively handsome crop. Select oats with thick straws—one bushel oats with two bushels small peas to the acre.

“Youat on Sheep.” Different breeds, breeding and rearing, different kinds of wool, portraits of different breeds, &c Cloth, 8 vo. \$1.00 postpaid, can be procured from the author of this Treatise, P. O. Box 693, Baltimore, Md.

SWINE.

The hogs of the farm should be fed in lots of equal size, and their rations suited to their age and the purpose for which they are fed. Avoid mixed sizes in feeding.

It is hardly possible to over-feed a hog with corn that has at first had a liberal feed of pumpkins. We knew one to eat too many pumpkins.

Try to arrange and feed in such a way as to avoid the necessity of ringing the shotes and feeding hogs in winter. A clover sod with a variety ration, and wood ashes and salt always by them, will accomplish much in this direction.

If hogs are lost by cholera, it is no reason why faith should be lost in sanitary measures, but rather should prompt to better sanitary rules and greater care in all directions. As a rule, men that give the most rational treatment have little fear of a breakout in their own herds.

Rye can be sown any time up to first week in November for a crop of the hogs to harvest next year. They are cheap harvesters, and rye for this purpose is a most excellent substitute for

wheat to keep crop rotation, and cannot be excelled as a protecting crop for young clover and timothy.

• Feed a little salt to the hogs as well as cattle. Do not stunt pigs the first few months. Secure best breeds. There will be no need of wasting anything on the farm where hogs and poultry are raised. The pig especially is not very dainty about what he eats.

QUANTITY OF SEED REQUIRED TO SOW AN ACRE.

Barley, broadcast...	2 to 3 bush	Kale.....	5 lbs
Beans, Dwarf, in drills..	1½ bush	Melon, Musk, in hills..	2 to 3 lbs
Beans, Pole, in hills...	10 to 12 qts	Melon, Water, in hills.	4 to 5 lbs
Beets, Table, in drills...	6 lbs	Oats, broadcast.....	2 to 3 bush
Beets, Mangel Wurtzell.	5 lbs	Onion, in drills.....	6 to 8 lbs
Broom Corn, in hills...	8 to 10 qts	Onions for Sets, in drills	50 to 60 lbs
Buckwheat.....	1 bush	Onion Sets, in drills...	6 to 12 bush
Cabbage in beds to transp't.....	½ lb	Parsnip, in drills.....	4 to 6 lbs
Carrot in drills.....	3 to 4 lbs	Round Peas, in drills..	1½ bush
Clover, Red.....	16 to 20 lbs	Wrinkled Peas, in drills	1¼ bush
Clover, Crimson.....	15 to 20	Peas, broadcast.....	2¼ to 3 bush
Clover, White.....	10 to 15 lbs	Potatoes (cut tubers)...	10 bush
Clover Alsike.....	10 lbs	Pumpkin, in hills....	3 lbs
Clover, Lucerne or Alfalfa.....	15 to 20 lbs	Radish, in drills.....	8 to 10 lbs
Corn, in hills.....	8 to 10 qts	Rye, broadcast.....	1½ to 2 bush
Corn, for Fodder.....	3 bush	Sage, in drills....	8 to 10 lbs
Cucumber, in hills...	2 lbs	Salsify.....	8 to 10 lbs
Flax, broadcast.....	1½ to 2 bush	Spinach, in drills.....	15 lbs
Grass, Kentucky Blue.	2 to 3 bush	Squash (bush varieties)	
Grass, Orchard.....	2 to 3 bush	in hills.....	4 lbs
Grass, English Rye....	3 bush	Squash (running varieties.....)	3 lbs
Grass, Red Top.....	1½ to 3 bush	Sugar Cane.....	12 lbs
Grass, Timothy.....	½ bush	Tomato, to transplant..	¼ lb
Grass, Hungarian.....	1 bush	Turnip, in drills.....	2 lbs
Millet.....	1 to 1½ bush	Turnip, broadcast.....	2 lbs
Grass, Lawn.....	3 to 4 bush	Vetches, broadcast....	2 to 3 bush
Hemp.....	1 to 1½ bush	Wheat, broadcast.....	1½ to 2 bush

MONEY VALUE OF FEEDING STUFF.

Average money value per 100 lbs. of feeding stuff as given by Dr. Wolff of Germany.

Corn,.....	\$1.11	Wheat Bran,.....	\$1.01
Corn Stalks.....	.39	Cotton Seed Meal.....	2.20

From the reports of the Connecticut Experiment Station.

Dent Corn.....	\$1.05	Clover Hay.....	.77
Flint Corn.....	1.13	Timothy Hay.....	.62
Sweet Corn.....	1.26	Corn Fodder, field cured,	
Western Corn.....	.94	[very good].....	.53
Corn Meal.....	1.03	Cotton Seed Meal.....	2.25
Wheat Bran.....	1.02	Cotton Seed Hulls.....	.49
Wheat Middlings.....	1.03	(N. Y. Experiment Station)	

WHAT SHALL WE EAT?

This is an important question in the times of high prices. Dr. Hall, in his *Journal of Health*—a good authority by the way—says the cheapest article of food at high prices are bread—especially corn meal—butter, molasses, beans and rice. He shows that 25 cents' worth of flour at 8 cents per pound contains as much nourishment as \$2.25 worth of roast beef at 25 cents per pound, and that a pint of white beans, costing seven cents, has the same amount of nutriment as three and a-half pounds of beef at 25 cents per pound. Here are some of the common articles of food showing the amount of nutriment contained and the time required for digestion:

	Time of digestion.	Amount of nutriment.
Apples, raw.....	1 h. 50 m.	10 per cent.
Beans, boiled.....	2 30	37 per cent.
Beaf, roasted.....	3 30	25 per cent.
Bread, baked.....	3 30	60 per cent.
Butter.....	3 30	96 per cent.
Cabbage, bo'led.....	4 30	7 per cent.
Cucumbers, raw.....		2 per cent.
Fish, boiled.....	2	20 per cent.
Milk, fresh.....	2 13	7 per cent.
Mutton, roasted.....	3 15	30 per cent.
Pork, roasted.....	5 15	24 per cent.
Poultry, roasted.....	2 45	27 per cent.
Potatoes, boiled.....	2 30	13 per cent.
Rice, boiled.....	1	38 per cent.
Sugar.....	3 30	96 per cent.
Turnips, boiled.....	2 30	4 per cent.
Veal, roasted.....	4	25 per cent.
Venison, boiled.....	1 30	22 per cent.

CARE OF THE EYES.

Mothers do not always realize how important a part the eyes play in the general health of their children. For example, many would never connect a stomach trouble, nausea and apparent indigestion with an imperfect eye focus.

Every mother should make a few rules in this matter and allow no transgression of them.

Do not let the children read in the morning before the sleep has been washed from the eyes. Never read by a failing light.

If study must go on by gaslight, and this should not be allowed if possible to prevent, provide each child with one of the cheap brown or green card-board shades, to be had from stationers. A yellow shade should cover an electric light used to read by. Do not allow children to fall into the easy and injurious habit of rubbing the eyes at any unusual sensation in them. Give them the only rule—rub the eyes with the elbow only, because you cannot.

GOOD ADVICE.

Don't rent more land than you can work,
 Don't hope to thrive if work you shirk ;
 Don't think you're ever done with learning,
 Don't fancy saving's less than earning ;
 Don't overwork your stock or hands,
 Don't look to thrive off starved-out lands ;
 Use first-class tools, nor let them rust,
 Pay cash, nor ask the store for trust.
 Your word should be so none will doubt it,
 What you can't pay for go without it ;
 Don't hope the Lord will give you pelf,
 And take no pains to help yourself ;
 Make home the center of your life,
 He loves himself who loves his wife ;
 Don't growl, don't whine, don't cheat, don't lie,
 And till your work's done you won't die.

—*Southern Planter.*

ARGENTINA'S CATTLE EXPORTS.

The Argentine Republic exported to England last year, 1,675,600 frozen sheep, 90,000 live sheep, 29,000 frozen and 28,000 live cattle.

A PLEA FOR THE YOUNG.

EDUCATION IN HORTICULTURE, ETC.

TRAINING FOR THE EYE, HAND AND OTHER SENSES.

The cultivation of fruits, flowers and vegetables brings a constant reward in the way of education. One cannot be long in such an occupation without being awakened to the need of increased knowledge. It is a constant stimulus to reading and observation in many different lines of investigation. Nature puts her most subtle flavors and odors in fruits, flowers and vegetables. She paints them in the brightest and most marked of colors. Man has not been able to invent a pigment which will reproduce the scarlet with which nature paints leaves, flowers and fruit.—*Baltimore American.*

It is characteristic of the Germans, that even among the humblest, the children are taught and encouraged to take an interest in something that is instructive, elevating and pleasurable, leading to what may result in much profit in many ways.—In “Rushing America,” their example, if imitated, would be a great blessing to the rising generation in the development of the faculties. Have a flower garden, study music, have a little orchard, go fishing, select some branch in which to be interested, Entomology, Ornithology, Mineralogy, Conology. Less Greek and Mythology, substituting for these last more Geography and History of the United States with a little more of Anatomy, and plenty of exercise.—“Early to bed and early to rise.”—It is said that school children by such close application are liable to become short sighted from lack of sufficient physical exercise. Train the children so that they may grow up to be strong men and women for the betterment of the race.

NOT SATISFIED.

BY THE REV. R. E. SMITH.

Solomon says (Eccles. vi., 7): “All the labor of man is for his mouth, and yet the appetite is not filled.” Is it not true? How men toil and delve and worry for temporal things. The rest of the night is disturbed by fitful dreams, the result of overwrought nerves, and feverish anxiety lest some cherished gain shall not be realized. The day is filled with eager efforts. But when the prize is gained it is not appreciated.

Why, then, with all the toil of effort and the success of industry, is the “appetite not filled?” Partly perhaps because appetite is perverted and abnormal, and can never be completely satisfied until it is restrained and rendered reasonable in its demands. Certainly because *man’s wants and capabilities are too high and deep and broad to be satisfied with merely temporal things.* He has an intellectual nature that must have food for thought. He has an æsthetic nature which, in its well-developed stages, will not be pleased except the traces of the beautiful are seen. But, above all, he has a spiritual nature that was made for the enjoyment of the divine, *and will always be lonesome without God.*

But seeing that the years of time are too short to enable *all* to make the journey and reach the goal of complete satisfaction as the climax of material and intellectual success, or, if we undertake to reach it in this way, many of us will fall short of success; we are prompted to follow the divine rather than the human order. Jesus said (Matt. vi., 33): “*Seek ye first the kingdom of God, and His righteousness; and all these things shall be added unto you.*” In this way we acquire the essential elements of contentment at the beginning, have the divine promise for all needed temporal good, and can afford to wait, *if such be our Father’s will*, until “this mortal shall put on immortality” for the enjoyment of material wealth and the gratification of our desire for the beautiful; “there remaineth therefor a rest to the people of God.” (Heb. iv., 9).

RELIGION.

Religion is a divine current making luminous a common life. Bringing God into everyday life and makes every day a sacred day and every life a divine life.

FAITH.

Faith is the foundation in the whole economy of God and of man !

Without faith, it is impossible to please God ; and without faith in our fellow man, there could be no comfort, rendering the present life intolerable, with nothing to hope for in the future.

ABSTINENCE ALPHABET.

[A modern alphabetical psalm on the virtue of total abstinence is furnished by Dr. Cyrus Edson to a recent *North American Review*. It is one of the best essays of its kind in print :]

A stands for Alcohol ; deathlike its grip.
 B for Beginner, who takes just one sip.
 C for Companion, who urges him on.
 D for the Demon of drink that is born.
 E for Endeavor he makes to resist.
 F stands for Friends who so loudly insist.
 G for the Guilt he afterward feels.
 H for the Horrors that hang at his heels.
 I his Intention to drink not at all.
 J stands for Jeering that follows his fall.
 K for his knowledge that he is a slave.
 L stands for Liquors his appetite craves.
 M for convivial Meetings so gay.
 N stands for No that he tries hard to say.
 O for the Orgies that then come to pass.
 P stands for Pride that he drowns in his glass.
 Q for the Quarrels that nightly abound.
 R stands for Ruin, that hovers around.
 S stands for Sights that his vision bedim.
 T stands for Trembling that seizes his limbs.
 U for his Usefulness sunk in the slums.
 V for the Vagrant he quickly becomes.
 W for Waning of life that's soon done.
 X for his eXit regretted by none.
 Youths of this nation, such weakness is crime.
 Zealously turn from the tempter in time !

BIBLE STATISTICS.

Old Testament—Number of Books, 39 ; chapters, 929 ; verses, 23,214 ; words, 593,493 ; letters, 2,728,100.

New Testament—Number of Books, 27 ; chapters, 260 ; verses, 7,959 ; words, 181,253 ; letters, 838,380.

The middle and smallest chapter is 117th Psalm. The largest book is that of the Psalms. The number of authors of the Bible is fifty. Ezra, 7th chapter, 21, contains all the letters of our alphabet. The Bible was not until modern times divided into chapters and verses. The Bible or parts of it have been rendered into nearly two hundred languages. The first complete English translation was that by Wickliffe in 1380. The first American edition was printed in Boston, 1752.

MISCELLANEOUS.

INTEGRITY AND CAPACITY always have a market value, although they do not always command the highest market price.

OBEDIENCE is the first lesson to be taught to every child. Disobedience to the Law of God, the state or the laws of health, will surely be followed by punishment to the offender.

MONEY invested at 6 per cent. compounded, will double the principal in about ten years.

JOHN, my son, honesty is the best policy, your father has tried both ways.

It is estimated that a man's chances for being struck by lightning is about one in every five hundred thousand. His chances for drawing the capital prize in a lottery is about the same.

TRAVELERS will act wisely by never carrying all their money in one pocket.

EMERSON: "Every evil to which we do not succumb is a benefactor. We gain the strength of the temptation we resist."

CONUNDRUM—Why is an illicit distillery like the discovery of the North Pole. If you can't guess it, write to the author of this work, P. O. Box, 693, Baltimore, Md.

If you want to get rich—be mean. If you want to be miserable, be mean—If you want to be despised and forgotten when you die—be mean.

MORTGAGES.

According to the last Census less than half the Farms in the United States were free from mortgages. In the state of New York the amount aggregated nearly \$140,000,000. The rate of interest paid in different states ranging from 5 to 12 per cent. In the states of Pennsylvania, Maryland, Ohio, Missouri, Indiana and a few others the average amount of mortgaged farms is above fifty per cent; whilst as against this, it is shown, that only about one-fifth of the farms in this country are burdened with mortgages.

DEFINITION OF MORTGAGE—"The death grip." Moral—Beware of mortgages.

CHEAP.

It is not so easy to define the word cheap. It is a word sadly abused, misused and misunderstood.

English broad cloth of the finest quality cannot be produced for fifty cents per yard, and the purchaser of an all wool suit cannot expect the finest quality to be had for five dollars; neither can it be expected that pure Java coffee roasted and ground ready for use, can be bought for twenty-five cents per pound, when the genuine bean costs thirty-five cents when gathered. Not many get rich by selling their fabrics for less than cost—hence it is very necessary to discriminate between "low price" and "cheap."

The farmer, manufacturer or merchant cannot afford to sell goods for less than the cost of production, and a fair profit added—to determine what constitutes cheap, we must consider the cost of production and quality of the article.

Benjamin Franklin's theory was—that not anything was cheap that you neither need nor want.

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I consider them *the best Instrument of our times.*

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