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The state of agriculture
in Europe

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With the Authors Respects

The State of Agriculture in Europe.

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AN ADDRESS

DELIVERED AT THE

ANNUAL EXHIBITION

OF THE

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NEW-YORK STATE AGRICULTURAL SOCIETY,

AT SYRACUSE,

September 13th, 1849.

—♦♦♦—
BY JAMES F. W. JOHNSTON, F. R. S., S. L. & E.

HONORARY MEMBER OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND, AND AUTHOR
OF "LECTURES ON AGRICULTURAL CHEMISTRY AND GEOLOGY."

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At a meeting of the New-York State Agricultural Society, held at Syracuse, September 13th, 1849, the following Resolution, on motion of HON. HENRY WAGER, was unanimously adopted:

Resolved, That the thanks of the Society be presented to PROFESSOR JOHNSTON, for his able and eloquent Address delivered before the Society, and that he be requested to furnish a copy for publication.

B. P. JOHNSON,

Secretary.

THE STATE OF AGRICULTURE IN EUROPE, AN ADDRESS, &c.

MR. CHAIRMAN AND GENTLEMEN:

One of the first lessons a European has to learn after he has landed on the shores of this new world, is to dispossess his mind of all those associations, rich and rare, with which the history of past ages has connected the names of remarkable places. In passing through New England it was my fortune to stop at towns and villages called by names long familiar to my ears—the sounds of which seemed to say, “in a few hours or minutes you will arrive again at your own home and hearth.”

But in travelling from Albany to this place, I have met with people fresh from Troy—I have come through Utica and Rome—and from the lips of children have heard of other mighty cities which our earliest European lessons clothe in the hoar of remote antiquity, and illuminate with the glory of immortal deeds. In the desire thus to connect your new towns with the recollection of famous actions, I would read an admiration of the actions themselves, and secret aspirations after similar renown.

In the old world, I have just left, there exists an ancient Syracuse, rich in all those bounties of heaven, which

especially favour the husbandman—a genial and sunny clime—clear, blue skies, balmy air and never failing dews—a soil fertile in oil and wine, and abundant in corn, almost beyond belief.

Thousands of years ago, when no Saxon or Celtic foot, not even that of the roving Northmen, had yet trodden the American shores, this ancient Syracuse was the capital of a kingdom of six millions of souls; and though it had so many mouths of its own to fill, the produce of its teeming soil left still a large surplus for exportation. An energetic people, comparatively free—unbroken in spirit by frequent wars, by foreign conquerors, and by the degradation and oppression which afterwards beset their domestic hearths—availed themselves to the utmost of the bounties of nature, and by patient industry made their country the “*horreum Romanorum*,” and in the language of Livy, “*populo Romano, pace ac bello fidissimum annonæ subsidium*.” Now cast down and degraded, the successors—scarcely to be called the sons of the same people—languish in comparative indolence; and though the bounties of nature are ever fresh and new as in its palmiest days, there are few countries in which agriculture and the arts of life are in a more debased condition than in modern Sicily.

But time, which has wrought this melancholy change, has caused others more cheering to happen too. It may be, that amid the ruins of old Syracuse its ancient fires still live, on some future day to be lighted up anew, and more successfully, into a steady and enduring flame, which the foot of despotism shall never again be able to trample out. But however this be, it is gratifying to me to see—as it must be to you—that in a new country, peopled by a new race, a younger Syracuse has sprung up, emulous of the worth and glory of the ancient—nourished by free institutions—carried forward by the untiring en-

ergy of the Teutonic blood — above all, emulous of the agricultural renown of the Syracuse of distant times, and by the application of more mind and knowledge, to a less exuberant soil in a less favored clime, bent on creating a new granary of the nations, an unfailing western store house to a great and growing people.

It is a happy omen to me, coming among you for the first time, that I should meet with you to discourse upon scientific agriculture, in a city which recalls the vast fertility of the plains and slopes of Sicily — may the modern name like the ancient, descend to after times, associated with ideas of rich cultivation and prolific fields of corn!

It is not without anxiety, as you will suppose, that I appear for the first time before a large trans-atlantic audience. But though you are American born, gentlemen, your faces are familiar to me. They tell me you have Scotch and English hearts, and I believe I may throw myself confidently on your kind indulgence.

I cannot presume to address you on the general importance of agriculture; its fundamental connection with the welfare and power of every state; the estimation in which it has been held in all ages and among every cultivated people; the natural proneness of man to till the soil; the pleasure with which the most talented men, and the highest in station, have always looked forward to the time when leaving business and profession and the cares of office to younger men, the small farm should alone employ their quiet leisure; nor upon the greater attention and respect which this art and its cultivators now every where demand, and are every where receiving. These topics are familiar to you, and you are too rich in native talent to require a stranger to address you on generalities like these.

Nor does my very recent arrival in the United States, entitle me as yet to speak from my own observation upon the

existing condition of agriculture on this side of the Atlantic. I have selected, therefore, as the subject of my present address, the existing condition of agriculture in Europe.

There are two very different ways in which I might bring this subject before you. I might illustrate in the abstract, the amount of practical and scientific knowledge which Europe possesses in regard to each of the departments of rural economy, which its climate enables it to prosecute. Taking the methods of the best practical men, and adding to these the knowledge of those most skilful in theory, I might present to you a picture every detail of which was true, but the effect of which as a whole, would be to convey to you a most exaggerated idea of the actual condition of the art—even in Great Britain, where both in theory and practice it is supposed to be best understood, and most skilfully carried into operation. Or I might take you from country to country, and show you as we passed hastily along, the character of its rural population, the excellences or defects of its cultural practices, the condition of its arable soils, the qualities and treatment of its cattle, and generally what is doing by governments and people in each country for the improvement of the rural arts. I should thus set before you a series of pictures, true, not only in detail, but in their general effects upon your minds, though not partaking of those broad and comprehensive views, which a sketch of European Agriculture, as one whole, would be expected to present.

I propose, to some extent, to follow both methods. After a brief outline of the state of practical agriculture in the leading countries of Europe, derived chiefly from my own observations, I shall endeavour to give you an idea of the position in which agriculture as an art now stands—of what is doing to advance it—and especially of the aids which science is now lending to the practical economics of rural life.

SWEDEN. — Commencing in the north of Europe with the Scandinavian peninsula, I would remark, that in Sweden — especially since the accession of the late king, Carl Johan, better known by the name of Bernadotte — much attention has been paid to agriculture. The improvement and increase of the flocks of sheep for the growth of wool, the introduction of better breeds of stock, of newer implements, and of an improved rotation of crops — have successively received much attention ; but of late years the great force of the people has been expended on the drainage of the lakes and marshes with which the country is so plentifully studded over. The agricultural societies of the provinces, in conjunction with the Academy of Agriculture in Stockholm, have devoted much pains to what may be called the arterial drainage of their several districts; and though the more refined method of improvement, known in Great Britain by the name of *thorough drainage*, has not as yet been any where introduced, it is only just to the energy of Sweden to say that no European people, in proportion to its natural resources, has done more during the last twenty years in the reclamation of improveable land from the dominion of overflowing water.

Further advances also are secured by the translation, especially from the English, of the best works on scientific agriculture, under the auspices of the Academy of Agriculture, and by the establishment of agricultural schools and model farms, one of which each province is expected in a few years to possess. Thus in Sweden, as in all other countries, the period of improvement by mechanical means will be succeeded by one of improvement by chemical means — the nature and economical application of which latter means, books and schools will have taught, when the time for more generally applying them shall have come.

RUSSIA.—In Russia, agriculture as a whole is in a very imperfect condition. Here and there, especially in the neighborhood of large towns like Moscow and St. Petersburg, laboriously and skilfully cultivated fields may be seen, while herds of improved Swiss and short horned cattle are carefully reared on the domains of the rich nobility. The Emperor also, who knows well the importance of this art to the strength and prosperity of his dominions, sets an example to his subjects by the efforts he makes to introduce a better system of culture among the serfs on the Imperial estates, by the establishment of schools for the instruction of farmers in art and experimental science, and by the maintenance of model farms upon the appanages of the crown. But Russia, nevertheless, is half a wilderness. Millions of acres of perpetual forest cover rich soils which there are no hands to till. The value of an estate is measured not by the number of acres it contains, but by the number of souls which live upon, cultivate, and are sold along with it. As in the first clearings of a North American wilderness, where land is comparatively worthless, the soil is cropped till it is exhausted, and then new land is subjected to the plough and exhausted in its turn. In no country of the world, with the exception of Northern America, is there so vast a field for the useful emigration of agricultural settlers, as in the mighty Empire of Russia. But language, and religion and political institutions, oppose barriers which the Saxon, and I may say the Teutonic races generally, feel themselves unable to overcome.*

* For information on the state of agriculture in Russia, see also a paper by the Hon. Mr. Slocum, in the Transactions of the N. Y. State Agricultural Society, for 1848, p. 638.

GERMANY.—In order to obtain a correct opinion of the agriculture of a country, a man must not only view the country with his own eyes, but his eyes must be taught both what to look for, and how to look for it. The reports of travellers who are unskilled in rural matters—the educational institutions of the country itself—and even its agricultural statistics, are all unsafe guides where a really correct appreciation is desired of its true position in reference to this important branch of social economy. This observation is illustrated by the actual condition of the several branches of rural economy when compared with the state of agricultural instruction, and with the attention which has been paid to statistics in the different Kingdoms of Germany, and in France.

SAXONY.—In Saxony, a country greatly favored by nature in the character of its soils, the chief attention of the great landholders and of the government, has been long directed to the improvement of the breed of sheep, from which the celebrated Saxon wool is obtained. This Kingdom exhibits generally a very different appearance from the neighbouring country of Bavaria. In passing from the latter kingdom to the former, you “seem to pass,” says Mr. Royer, “from the desert into the land of promise.” “Two-thirds of the rich proprietors in Saxony,” he observes, “cultivate their own properties, and have established an order, neatness, and method, which, though far from agricultural perfection, you seek for in vain in France.”

WURTEMBERG.—In the Kingdom of Wurtemberg, where the instruction at the agricultural school of Hohenheim and elsewhere, is better organized, and at this moment more famed, than in any other part of Germany, and where, in fact, the art of culture as a whole is the farthest advanced,

the general cultivation is described by Mr. Royer as being melancholy, and, at a distance from the capital, very different from what the eulogies of authors had led him to suppose.

BAVARIA.—In Bavaria we find an imposing array of institutions and means of instruction, specially provided for the rural community, which are fitted to impress the superficial observer with a high idea of its agricultural condition. As in Wurtemberg, there is a central school of agriculture. There are also Chairs of Rural Economy in the Universities, and more than twenty Chairs of Agriculture in the Seminaries and polytechnic schools of the provinces, besides a general Agricultural Society, counting more than 8,000 members. These facts convey the impression of much zeal on the part of the government; much interest in agriculture on the part of the people; and an advanced state of the art of culture in the kingdom generally. But “the miserable aspect of Bavarian agriculture would lead one to suppose that all these means of encouragement are very inefficacious.” (Royer.)

The schools are badly organized or conducted. The great land-owners are indifferent on the subject of agricultural improvement, while the miserably defective condition of the roads and other means of internal communication indicate, that even the government which has organized all the formal apparatus we have mentioned, is not itself alive to the most fundamental element of agricultural progress.

PRUSSIA cannot boast either of its practical agriculture, or of its system of agricultural instruction. It is a proof of how very little has in past ages been done in the way of teaching the rural population the principles of the art of culture, that Prussia should so long have derived an

undeserved celebrity from the existence of a private agricultural school at Mögeln, established in 1806, and conducted till his death in 1819, by the distinguished Von Thaer. After his death the school he had founded was made a Royal Academy, and is still in existence. It contains at present only twenty pupils; and even in VON THAER'S time it never contained more than thirty-four. In the much praised primary schools of Prussia, a little instruction in gardening is the only teaching which bears an immediate relation to the future occupations of the rural population.

In the nature of its soils, indeed, which are sandy, light enough to be blown by the winds, and apparently almost sterile, Prussia has much to contend with. This is especially the case in its more ancient and central Dutchies. Westphalia and the Rhenish provinces are naturally richer, and are also more advanced and better cultivated.

Besides, until the revolution of the past year, the burdens or servitudes upon land, of a feudal kind — and of which in the New World you have no examples, except a few of a milder form in the seignories of Lower Canada — were so onerous and so unequally distributed, as greatly to retard the development of its agricultural capabilities. The state of the roads and other means of communication also, as in Bavaria, and the scarcity of large towns, have concurred with other causes, in retaining the agriculture of Prussia in a very backward condition.

HOLLAND. — If from the uplands of Germany we descend to the lowlands, and especially to that country which includes the islands at the mouths of the Rhine and the Scheldt, and the low country stretching northward to the Zuyder Zee and the Dollart, we shall find reason to stay our steps and to consider calmly the cause, and purpose,

and extent of the wonderful system of canals and embankments which the kingdom of Holland presents.

In a sketch of European agriculture, indeed, Holland is deserving of distinguished mention. Above all other European people the Dutch, though slow, have been patient and persevering in their agricultural labors. Occupying a few more elevated and fertile alluvial spots, in the midst of downs and bogs, and marshes and lakes, and the endless ramifications of many rivers, they have century after century struggled against nature. Draining marshes, pumping out lakes, damming back seas and rivers, reclaiming bogs, fixing by art the wandering downs, interlacing their country with an interminable net-work of gigantic canals ; — by such labors as these, they have extended the productive surface of their country, secured its possession, and made its natural riches available. And what makes their praise the greater and more deserved, is the constant watchfulness and care which the retention of their country demands. Exposed on the average of the last thirteen centuries to one great sea or river flood, every seven years, the possession of the land they have gained, is never secure. Lying below the actual level of the sea, large tracts of it are only preserved by the huge dykes that surround them, and to maintain these dykes requires unceasing vigilance, and a large yearly expenditure of money.

And though in past times the Hollanders have done great engineering works, yet the spirit of the sires has not degenerated in their living sons. The draining of the Haarlem lake, now in progress, is the boldest mechanical effort ever yet made in the cause of agriculture in any country, and promises to add no less to the material wealth, than to the engineering and constructive fame of the United Provinces.

I feel a pleasure in thus adverting to the impression made upon my own mind, during my various tours in Holland, in the presence of a meeting of agriculturists, many of whom may inherit from the early settlers of New York, a portion of that industrious and patient blood, which makes every end sure to the determined and persevering man.*

I may mention as an indication of the early desire of the Dutch authorities to promote the diffusion of Agricultural knowledge, that a very old regulation prescribes attendance on agricultural lectures as a necessary branch of study to the established clergy of Holland.† And though in that, as in many other countries, men of the old school at present act as a drag on the progress of scientific agriculture, yet enlightened and zealous minds are at work in various parts of the Netherlands, and advance is gradually being made. The name of MULDER ought especially to be mentioned as most eminent among the scientific men of Holland, not only in advancing pure science, but in advocating and promoting its general applications to the agriculture of his native country.

ITALY.—From Holland turn for a moment to Italy, in which country drainage works somewhat akin to those of the Dutch, form the proudest monuments of which even that famed land can boast, of the victory which persevering intelligence can achieve over the difficulties and seeming hostility of nature.

* For a fuller account of the *Rural Industry and Drainage of Holland*, which I wrote for the Edinburgh Review, see vol. 86, p. 419, of that work.

† This must be considered an admirable provision, enabling the pastor to advise in regard to the temporal pursuits, no less than the spiritual affairs of his flock.

Did time permit, I might present to you a most interesting historical sketch of the changes in agricultural condition and capability which that country has undergone from the period of the ancient Etrurians to the present day. And to the man of science, such a sketch would be the more interesting, from the circumstance that in all the changes which have taken place, the physical and geological structure of the country, has exercised a far more prominent and permanent influence, than either the remarkable industry and constructive skill of the Etruscan inhabitants, or the hostile incursions of its foreign invaders.

To the rich alluvial plains of Lombardy, of which rice and Indian corn, and wheat and abundant milk, are the natural productions ; and to Tuscany, in which something of the ancient industry and persevering practical skill of the old Etrurians* still survives, the agricultural enquirer must proceed to see the bright side of Italian cultivation.

But it is in Tuscany chiefly that he will find the most interesting evidence of the conquering power of the living mind over the obstacles of physical nature. The Maremme of Tuscany and the marshes of the Val di Chiana, like the Campagna and the Pontine marshes of the Roman dominions, have long breathed forth that pestilential malaria which, like the summer exhalations of the sea islands and river mouths of your Southern states, carries on its wings fever and lingering ague and frequent death. It is one of the great modern triumphs of engineering skill, applied to the promotion of rural industry—second only to the gigan-

* To those who are desirous of obtaining the means of forming clear notions of the physical structure of Italy, of its climatic conditions in the times of the ancient Etrurians, and of the industrial skill as well as the social relations of this people, I venture to recommend a perusal of Denis's *Cities and Cemeteries of Etruria*.

tic labors of the Dutch, of which I have spoken, and to the artificial drainage of our English fens—that the terrors of the Maremma have in a measure been bridled in—that the Val di Chiana, in so far as it lies within the borders of Tuscany, has been drained and dried—and that cheerful health and rich crops prevail over large tracts of country, in which it used to be almost certain death to linger.

Among a Republican people, I, who owe allegiance to a constitutional Monarchy, may be permitted to name to you Leopold the First, of Tuscany, as the principal author of all this good. Whatever our opinions on other matters may be, we shall all, I am sure, agree in this, that those men are great and worthy to be honored, who having been gifted by God with large means and great opportunities, make use of those means and opportunities for the glory of God and the good of their fellow creatures—who, instead of war and scarcity, and suffering and death, promote peace and plenty, and health, and the multiplication and prolongation of human life—the moral lesson of whose life inculcates the truth that man's proudest triumphs are not those he achieves over his fellows, but those which he gains over himself, or by which he compels the unwilling powers of nature to minister to the material comforts of mankind—who encourages what will unite instead of distract, what will cement instead of divide the nations of the world—as that broad belt of water which laves alike the shores of your country and mine, instead of separating, as in former years, now binds us together more closely than if the same continent contained us.

As the promoter of such ends for twenty-five long years in his country of Tuscany, the name of Leopold the First will not sound unpleasantly even in your republican ears.*

* For an account of the reign of Leopold, see Napier's *Florentine History*, Vol. VI, and for a detail, with drawings, plans and maps, of the engineer-

FLANDERS AND BELGIUM. — In Flanders, both Belgian and French, you are probably prepared for an admission on my part, of great agricultural skill and success. I am compelled, however, to confess my own impression to be, that a great portion of what has been written upon Flemish husbandry, partakes of the character of a romance.* The cultivators of Belgian Flanders have the merit of raising fair crops from certain tracts of poor and sandy soil, of husbanding and applying manures so as to keep such land in culture, and of skilfully varying their crops so as to prevent a premature exhaustion. But no knowledge of the general principles of agriculture is widely diffused among them. The improvement of wet and of heavy clay soils, except by open ditches, is almost unknown. Improved implements and thorough drainage, and modern modes of manuring, and some small instruction at least in the elements of science as applied to agriculture, have still to be introduced among them, before they can rank in general knowledge or in skilful practice with the farmers of Scotland or England.

And, indeed, in Belgium as in France, the progressive subdivision of property opposes a growing obstacle to that general amelioration of agricultural practice, which the wants of a numerous people and the progress of knowledge demand. Where the average extent of properties and farms over a whole province is already reduced to about an English acre, we cannot look for the introduction of any of those improvements which demand the purchase of new or comparatively costly implements, the rearing and

ing operations by which the Maremme were dried, see *Memorie sul Bonificamente delle Maremme Tuscani*, by Fernando Tarlini, Florence, 1838.

† *L'Agriculture Pratique de la Flandre*, par M. J. L. VAN AELBROECK, Paris, 1830, and *Memoire sur L'Agriculture de la Flandre Francaise et sur l'Economie Rurale*, par J. CORDIER, Paris, 1823.

feeding of multitudes of stock, the employment of hired labor, or generally the application of capital to the land. As in Ireland, the subdivision or morcelling of the tillage farms, has already, in whole districts, been carried to the starvation limit. As into Ireland, the potato failure brought with it into Belgian Flanders, famine and disease, and large emigration,—and notwithstanding all that wise governments can do, it is to be feared that on the recurrence of similar visitations, similar social evils will in both countries again re-appear.

FRANCE.—In France I need hardly inform you that practical agriculture is far in arrear. In Normandy the mixture of Teutonic blood has probably some connection with the superiority of the husbandry of this province as compared with most of the other parts of the kingdom. It is certain at least, that notwithstanding the many efforts made by persons in power to promote the introduction and adoption of better methods, the general farming of La Belle France advances with comparative slowness.

This country indeed presents another striking instance of the small connection which may exist between the existence of extensive means of agricultural instruction, provided by the central government, and the practical skill of the rural population.

In 1843 there existed in France one hundred and fifty-seven agricultural societies — six hundred and sixty-four agricultural committees — twenty-two model farms, some of which had schools attached to them—and fifteen schools and chairs of agriculture and agricultural penitentiaries. In the early part of 1849, under the auspices of the republican government, and as part of the plan of M. Fouret, then Minister of Agriculture, twenty-one farming schools had already been opened—a national agricultural uni-

versity was about to be established on the farms in the little park of Versailles, and a hundred and twenty-two agricultural societies, and three hundred minor institutions, had participated in the funds voted for the encouragement of Agriculture.

Though it is unquestionable that a country may attain a high rank in agriculture without the aid of formal agricultural schools—provided, as in Scotland, other early mental training is placed within the easy reach of the rural population—and that in spite of numerous schools, if other obstacles intervene, the cultivators of a country may lag far behind ;—yet both common sense and experience show that of two nations of the same blood, placed otherwise in the same circumstances, the one which teaches the principles of agriculture in its schools, will exhibit the most productive harvests on its fields ; and that, as in England and Scotland now, a time will come in the agricultural history of every country, when old means and methods will fail to maintain the rural community in a flourishing condition, and when every new means of fertility which advancing knowledge can supply, must be made generally known, and become generally employed. Such are the simplest and most common sense arguments in favor of agricultural teaching—the inutility of which might be argued with some show of reason, from the comparatively small progress yet visible among the fields and farmers of France and Bavaria.

The agricultural statistics of France, which the government has collected and published in great detail, would supply many interesting subjects of reflection, were I at liberty to dwell longer on this part of Europe. I may only mention—as pregnant with thought and instruction in regard to the condition, the food, and the general mode of living of the rural classes of France—the fact, that the

number of conscripts who are rejected on account of deficient health, strength and stature, is constantly on the increase; that forty per cent are turned back from this cause; and that though since 1789 the standard has been three times reduced, as large a proportion of the conscripts is below the required height, (now five feet, two inches,) as ever.—(Rubichon.) Such facts as this show how closely the discussion of agricultural is connected with that of the most profound social evils.

SWITZERLAND.—To Switzerland, I only allude as one of those countries in which the influence of natural intelligence and a fair share of early instruction, has been brought to bear most successfully on the improvement of the soil, and especially of the breeds of stock which are best adapted to its peculiar dairy husbandry. Those advances which require the application of capital and science, such as thorough draining and special manuring, are there, however, still unmade; and it will probably be many years, before, in these respects, the cultivators of the Swiss vallies and mountain slopes, can closely imitate the present improved practices of the British Islands.

SPAIN.—The agricultural condition of Spain, suggests melancholy reflections. The central table lands of this country* are reckoned among the finest wheat growing districts in the world. The culture is rude and imperfect. The soil is scratched with a primitive plough, and is seldom manured, yet the returns are said to be prodigious, and the quality of the grain excellent. But where nature does

* The two elevated plains of New and Old Castile, and that of La Mancha, separated from each other by the granites and metamorphic rocks of the Sierra Nevada, are composed of a white limestone, occasionally covered with the drift of other rocks. These plains are burned up in summer, so as to produce no grass till the October rains fall, but they yield magnificent crops of wheat. (Sir E. Head.)

much, man too often contents himself with doing little. Amid all this plenty, the peasant is miserable. He lives in a cabin of baked mud, or in burrows scooped out from the friable hillocks, ignorant of the luxuries of furniture, and barely possessing the necessities of life. The want of roads and of means of easy transport, makes his produce almost worthless, so that a comparatively spare population exists, and much wretchedness in the centre of fertile fields and a land abundant in corn.

We sometimes think ourselves unfortunate to have been born, or to be doomed to live where clouded suns impart a lessened light and heat; or where the frosts of winter bind up for many months the hardened earth. Yet in such climes, man more really lives, and exercises a truer dominion over inanimate things, than where tropical skies appear to prepare for him an unceasing enjoyment. Where mind and mental energy are dormant, he only vegetates or exercises his brute passions. Where by perpetual struggles he subdues the adverse elements, bends circumstances to his will, forces a copious abundance from an unwilling soil and in spite of inclement seasons—there he most truly lives, and amidst his hardships enjoys life most; there refreshing sleep visits him with her balmiest breath, and in the power of mind over matter, which his success displays, he brings out more clearly the claim of man to a likeness with Him who is all mind, and to whose slightest intimation all matter bends.

GREAT BRITAIN.—In striking contrast to the case of Spain, is the agriculture of the Island in which I was born, and from which so many of your forefathers have come. I need not tell you of our uncertain climate—our fickle sky, our frequent rains, our late frosts in spring, our early frosts in autumn, the cold winds and temperate suns of our most

favouring summer, the mists and fogs that settle over us at every season of the year. I only remind you of these things, and ask you to contrast with them the large crops we can reap, the high rents we can pay, the poor lands we have enriched, the local climate we have ameliorated, the wide wastes we have subdued beneath the plough, the northern districts we have tamed down to the production of wheat, the large population we have reared, and in ordinary seasons are still able to feed, and—amid all the croakings and complaints of individuals and of classes—the vast amount of material comfort and of intellectual elevation which the island exhibits. How much kinder, on the whole, the Deity has really been to us than to prolific and sunny Spain; how much better our fortunes as a people, how much happier our individual lot?

PRACTICAL IMPROVEMENTS IN GREAT BRITAIN.—Among the greatest of those practical improvements *in the treatment of the land*, by means of which British agriculture has been advanced to its present condition, I may mention :

1st. *The alternate husbandry*—a judicious rotation of crops. In this walk Flanders was probably the earliest among modern European countries to make decided and important advances.

2d. *The introduction of thorough drainage*.—To a certain extent and in a certain way, under drains have been made in almost every country of Europe, and are at least as old as the time of the Romans. But the necessity and almost universal profit of the system as it is now understood and practiced, was first demonstrated in Scotland, and owes its general introduction to MR. SMITH, of Deanston.

3d. As the complement of thorough drainage, the introduction of *deep and sub-soil ploughing*. These practices

have renovated shallow, worn out soils, by bringing up new materials ; have opened a passage for the roots to descend deeper in search of food ; and have provided a more ready outlet for the surface waters into the drains below.

4th. *The judicious and continued application of lime*—according to principles now beginning to be generally understood. When applied without the requisite knowledge, or without regard to future consequences, the use of lime has been, and will still be, one of the most ready means of exhausting the most fertile soils.

5th. *The use of Bones*—in various forms, as an application to land in various conditions, and for the growth of various crops.

6th. Generally, what is called *high farming*, comprehending :

- a. The culture of green crops extensively.
- b. The making of rich home, and the purchase of valuable foreign manures of various kinds to a great extent.
- c. The rearing and feeding of improved breeds of stock, for the conversion of one form of produce into another, which meets with a readier market, or is otherwise more profitable.
- d. The custom of *full feeding*, both for plants and animals, from early youth to full maturity.

It is the characteristic of this kind of farming, that it spares no reasonable expense—in implements, in manures, in labour—as all experience has shown that a liberal treatment of the land, makes the land liberal in return ; and that to the stingy farmer, the land is most niggard of her crops.

7th. *The introduction of lighter and better contrived implements*, of machines to economise labor, and of horses having a quicker step.

Such are generally the practical methods or processes by which British agriculture has been advanced to its present condition.

In connection with this improved condition of British agriculture, and the practices it involves, you will excuse me if I advert for a moment to one aspect in which British agriculture may be regarded, which at the present moment is most vitally connected with the interests of the English farmer, and may be neither uninteresting nor un instructive to you.

Were an intellectual foreigner, previously unacquainted with Great Britain, with the character of its people, or with its social condition, to be informed regarding this country, that though occupying only a small and thickly peopled corner of Europe, shrouded for many months of the year in fogs and mists, seldom and briefly visited by the fervid sun—never, I may say, by such a sun as now shines upon us—and raising its own grain crops with cost and difficulty to feed its rapidly increasing inhabitants—were he to be told that the Legislature of this country, in which the agricultural body is the predominating interest, had thrown open its island harbors to all comers, and trusting to superior energy, perseverance and skill, had invited even the most fertile and favored regions of the globe to a free competition in their own grain markets, fearless of the results;—apart from all fiscal theories or political views with which my profession and pursuits forbid me to intermeddle, I ask you, if such a foreigner, so instructed, could fail to admire the open boldness, to look with respect on the resoluteness of such a country, or to long for an opportunity to study, not only the character and habits of its people, but the modes of culture practised by them, with so much success, in a region so unfavored by nature.

And were he actually to come among us, it would be easy for him, having started from the Land's end, to proceed from one warm hearted and hospitable farmer to another, till the Pentland Firth arrested his course, and all his journey long he might converse with cultivators of ardent minds, full of practical and general knowledge, who in most unpromising circumstances refuse to despond, and while they see so much every where around them awaiting the hand of the improver, will not let slip the anchor of hope; who differing widely, perhaps, in politics, and as to the policy of certain fiscal regulations, yet feel alike that to resolute men the conquest of the stubborn land is as sure as the dominion of the sea; that new difficulties only demand new exertions and that new energies are equal to meet new emergencies.

On quitting the British shores, after such a tour, that foreigner would carry with him a true impression of the flower of English and Scottish Agriculturists, and his first admiration of the resolute firmness, and his estimate of the skill of the island farmers, would be confirmed and strengthened by his actual survey.*

In other parts of the world I might fear lest my audience should accuse me of over exalting, by such language as this, the character of my own country and its people. You, who feel so just a pride in the noble land you possess, will know how to make allowance for my pride in mine. But indeed whatever can be truly said of the spirit and energy of British farmers, may, I begin

* For two recent estimates of the condition of Agriculture in Great Britain, see—

WECCHERLIN. *Ueber Englische Land-wirthschaft und deren Anwendung auf Land-wirthschaftliche Verhältnisse insbesondere Deutschlands. Stuttgart and Tübingen, 1845.* And

COLMAN'S *British Agriculture.* London and Boston, 1840.

to feel, already be said, with almost equal truth, of the farmers of your Northern states. Of the west and south I cannot as yet, from personal observation, speak. In Nova Scotia and New Brunswick, two younger Provinces, I have seen a picture of what Maine and New Hampshire, and Massachusetts especially, have been; and in the gradual conquest which persevering labor has in these states achieved over drifted rocks and hungry gravels, and sandy barrens, and ungenial swamps, I discover the resolute spirit still living of those men who centuries ago dared to cross a then wide and little known sea, in search of new and freer homes, and whose descendants now till alike the soils of the Old England and the New. Time has not impaired the energy and enterprise of either; I believe I may say it has left their hearts unchanged too.

And now you are ready to ask me, what those, who in Europe are most in advance in the practice of the rural arts, look forward to as likely to help on agriculture still further. In what especially, you will enquire, do we of Great Britain trust, who have thrown down the gauntlet to the farmers of the world? These questions I shall answer by drawing your attention briefly, to what may be regarded as the characteristic or living feature of the agriculture of our time—what you no doubt expect me briefly to speak of, the direct applications, namely, of natural science to the several branches of rural economy.

The main purposes for which natural science is applied to rural economy, are—

First. To explain the reasons of practices already adopted, or of things already observed, and to supplant old and defective by new and better usages.

Second. To establish general principles, by means of which, a short cut is provided for the unlearned, to the

knowledge, practical and theoretical, we already possess. A single principle explains and thus recommends or forbids many practices, according to the circumstances of the soil, place, or season.

Third. To enlarge our actual knowledge by new discoveries susceptible of practical application.

On these several objects of natural science, in its applications to agriculture, it would be out of place at present to dilate. It will be sufficient if I briefly draw your attention to some of the general results, in reference to rural economy, at which science has already arrived.

With this view I might draw my illustrations from any one of the many different branches of natural knowledge. I might select for example :—

1st. The general relations of *Physical Geography*, to the art of culture — such as

a. The influence of broad seas and of great lakes and rivers, of tides, of sea currents, and of prevailing winds, on the capabilities of a country and the practices and profits of its cultivators.

b. The influence of mountain elevations and depressions, of high table lands and of low level plains—or

2d. The general indications of *Geology* in regard to the fertility of a country, the branches of husbandry to which it is best adapted, and the means by which its fertility may be best promoted.

The Geological Map of this State and the volumes of the Natural History Survey, afford abundant illustrations of the relations of this science to practical agriculture—or

3d. The relations of *Meteorology* and *Botany* conjoined—such as

a. The adaptation of certain plants to certain climates—

of sugar, cotton and rice to warmer; of buckwheat, and Indian corn, and wheat, to warmer and drier; of rye, barley and oats, to colder and more uncertain climates.

b. The nature of rust, smut, mildew, the maizæ, brand, &c., and the circumstances of local climate most favourable to their appearance—or

4th. The relations of *Geology* and *Vegetable Structure* conjoined—such as

That certain plants and soils are mutually adapted to each other, because of the special structure and natural habits of the plants, and the physical characters only of the soils.

The Valley of the Mohawk, for example, is remarkably prolific in Indian corn, and raises comparatively little wheat—while the district of Syracuse produces wheat abundantly, and is less favorable to corn. So in Great Britain and Ireland, we have our turnip and barley soils, distinguishable readily, by the practical man, from the wheat and clover soils. These differences are independent of chemical composition, and are not to be explained upon chemical principles. They are dependent upon the special relation which the structure and natural habits of the plants bear to the physical characters of the medium in which their roots are made to grow—or

5th. The general indications of *Geology* and *Meteorology* conjoined—such as

The relations of the nature of the rocks, of the soil, and of the fall of rain taken together—

a. To the necessity for under drainage, and the means of effecting.

b. To the necessity for artificial irrigation, and the easiest mode of obtaining a supply of water for the purpose—or

6th. The general relations of *Zoology* and *Animal Physiology*.

a. To breeds of domestic animals, and to the preservation of their purity.

b. To the rearing, feeding and general tending of stock.

c. To the agency of animal life in fertilizing the soil.

d. To the attacks of insects upon our cultivated crops—or

7th. The general indications of *Chemistry*—such as

a. That a fertile soil, in addition to various organic compounds, contains at least eleven different mineral substances.

b. That plants contain, usually, or in most of their parts, the greater number of the same mineral substances.

c. That the animal, as a whole, also contains them, but distributed throughout its several parts in a manner different from that in which they are found, either in the plant or in the soil.

d. That the plant standing, as it were, between the soil and the animal prepares for the latter both its organic and its mineral food.

e. That an intimate and beautiful relation exists between the soil, the plant and the animal—or between the living and the dead things of nature—or

8th. The general indications of *Geology* and *Chemistry* conjoined—such as

a. That certain Geological formations are especially rich in some of the mineral substances found in and required by plants, and produce soils which with special treatment will prove fertile and profitable to the cultivator.

b. That others are especially defective in some of these substances, and form soils which are naturally unproductive.

c. That some abound in all the kinds of mineral matter which plants require, and yet yield soils which are naturally unfertile.

I. RELATIONS OF GEOLOGY TO AGRICULTURE.

From any one of these general topics, I might select beautiful examples of the close bearings of science upon profitable farming — but time does not permit me to illustrate in detail any one of the general relations to which I have referred. A few observations, however, in reference to the special applications of Geology and Chemistry, will neither detain us long, nor prove, I believe, generally uninteresting.

In reference to Geology, I could have wished to point out to you the very close economical connection which recent discoveries have established between practical geology and practical agriculture — how the manufacture and abundance of valuable manures, for example, is actually dependant on the progress of geological discovery. I must be content, however, with a brief allusion to the geology of the United States.

There are few countries, indeed, which more clearly than your own, show the relations which geology bears to agriculture in all its branches. Your wide prairies are naturally distinguished from your vast forest lands, by the character of their soils, and these again by the geological structure of the regions over which they extend, and from which they are generally derived. The broad treeless zone of calcareous marl, or rotten limestone — called the prairie or cane brake country — which crosses Alabama in an east and west direction,* owes its natural nakedness to the dry, waterless, chalky deposits, which for a depth of hundreds of feet form the uppermost rocks of the country; and the tenaceous, soapy, unctuous quality of the soils, with which the carriage wheels of travellers in that State, in wet weather, become familiar, is owing to the same cause.

* Lyell's Second Visit to the United States, p. 42, 89.

So your zones of differing timber, as you ascend from the alluvial swamps of the shores in your Southern states, across the eocene and cretaceous beds to the mica slate, gneiss and granite of the Appalachian chain, are the consequences and indications of diversities in geological structure. The swamp willow, the cypresses, (*thyoides* and *disticha*) the swamp hickory, the green palmetto, the tall magnolia, the red maple, and the cotton wood of the lowest swampy spot—the hickory, oak, magnolia, beech, walnut, tulip tree, and holly, of the dry alluvial bluffs—the perpetual pines of the tertiary (eocene) sands—the naked prairie of the cretaceous marls—and the mixed oaks, hickory and pines which appear on the primary rocks—all these zones of different timber indicate the natural connection of the vegetation of a district with the nature of the rocks on which it rests.

Nor are these geological relations of vegetable life without their influence on the daily movements of your shifting population. I have elsewhere shown how directly the movements, the natural expansion I may call it, of our first class farmers in Scotland, is not only influenced but actually, as it were, prescribed, by the geological character of the district in which they have been brought up and to which they intend to move.* So it is among you. "Those who go southwards from Virginia to North and South Carolina, and thence to Georgia and Alabama, follow, as by instinct, the corresponding zones of country. The inhabitants of the red soil of the granitic region keep to their oak and hickory; the 'crackers' of the tertiary pine barrens, to their light wood; and those who inhabit the newest geological formations in the sea islands, to their fish and oysters."†

* See an article in the Edinburgh Review for March, 1849.

† Lyell's Second Visit to the United States, p. 110.

And to this illustration of a fact, which may be proved, I believe, by observation in every country of the globe, SIR CHARLES LYELL adds a sentence, from which I am sure you will at once draw an important, practical lesson. "On reaching Texas, all these different classes are at fault, because the cretaceous strata in that country consist of a hard, compact, siliceous limestone, which defies the decomposing action of the atmosphere, and forms table lands of bare rock, entirely unlike the marls, clay and sand, of the same age, in Alabama."

The tillers of the red land, of the pine barrens, of the marshy prairies, and of the sea island swamps, are equally at a loss when they migrate to a country of which the soils and surface differ from all they have left. And how is this? Because they have no familiarity with those general principles of chemical science on which all culture on all soils depends—because, if they wish to continue the same kind of tillage, and on soils similar to those they have left, they have not such a knowledge of the general principles of Geology as would enable them at once to say, to this or to that country, I must go, for there alone am I likely to find them.

In my own country, I have been accustomed to press upon the agricultural community the importance of such geological knowledge to them, because of the numerous colonies we possess in all parts of the world, and because of the swarms of emigrants we yearly send off to subdue and people them.* But to you whom I now address, who already occupy, or in connection with kindred blood are destined to subdue and people, nearly half a world—how much more important must such knowledge be! Your westward movement will continue for many generations,

* See the Author's *Elements of Agricultural Chemistry and Geology*, Fifth Edition, p. 616.

and how much surer will the way to wealth be to your hardy pioneers, if they have been taught in their early homes, not only how to choose land, but where to look for the kind they wish to buy, and how to till it best, whatever it may be, when it has come into their possession.

I ought, perhaps, to apologise for saying so much on this subject. To you, who have expended so much public money, and so large a measure of talent in developing the geological structure and natural resources of this and other states, it may appear presumptuous in me to urge further upon your attention, what you have shown that you already so fully appreciate. I may plead as an excuse, that in a country where all action originates, and all power centres in the masses, a brief discussion of the subject before a great meeting like this, may help new listeners towards a proper general estimation of the practical value of science—and that what I have said will not fail in being useful to scientific agriculture, if it convince a single undecided voter in this great commonwealth of the worth of those aids which science offers you, in developing the resources of the soil.

II. RELATIONS OF CHEMISTRY TO AGRICULTURE.—

Permit me now to say a few words on the subject of chemistry, in its relations to agriculture.

The special applications of this science, as many of you are already aware, are far too multiplied to admit even of enumeration. Of the practical ends which have been more or less perfectly attained by means of chemistry, I might mention such general ones as these :—

1st. In what *general* exhaustion consists, how it is produced, and how it may be repaired ?

2d. In what *special* exhaustion consists, how it is

brought about, either naturally or artificially, and how it is to be corrected ?

3d. What plants, in general, require to make them grow well ?

4th. What manures ought to contain, to be generally serviceable ; what, with a view to special purposes, they ought specially to contain ; and how they are to be artificially prepared ?

But such topics are too general and indefinite to make a sure impression on the mind of the practical farmer, in the brief moments I have spent in enumerating them.

I mention further, therefore, such special points as the following :—

1st. How to bring crops to earlier ripeness in late and elevated districts.

2d. How to reduce the straw producing tendency of the land.

3d. How to hasten or promote, or to push forward lag-gard, yellow, and stunted vegetation.

4th. How to strengthen the straw of your grass crops, where they are liable to be laid.

5th. How to fill the ear and make it larger, where long culture or natural poverty has reduced its size.

6th. How to improve the deficient feeding quality of turnip, and other root crops, when grown on mossy land.

7th. To quicken the organic matter in dead, deaf, or peaty soils, and make it available for the nourishment of plants.

8th. To prepare artificial manures, which shall nourish any crop on any available soil.

9th. To promote growth on *slow*, and to retard it on *quick* soils.

10th. On newly brought up subsoils, and on trenched land, what manures ought to be used, and why.

11th. Why a rotation of manures, as it is called by practical men, is necessary and where.

12th. That the use of lime to a certain extent, and in a prudent way, is necessary to the highest fertility.

13th. That saline and nearly all other manures, do more good upon light and open, than they do upon stiff and close soils, and why.

14th. How to economise the consumption of vegetable food, and to adapt it to the purpose for which an animal is fed.

15th. How to prevent the disease called *fingers and toes*, in turnips and other roots, and how to render mildew and ague equally rare?

To do these and many similar things economically, skilfully, and with more or less success, are among the practical ends to which chemical investigations have already led us.

They also supply answers to many practical questions, such as:—

1st. Why cabbage crops so greatly exhaust the soil, and how such exhaustion is to be repaired?

2nd. Why tares cut green exhaust the land, and give inferior wheat?

3d. Why tares are seldom good after crops of clover?

4th. Why lime produces a more marked benefit on one soil than it does upon another?

5th. Why one variety of lime is more useful generally, or in particular districts on particular farms and fields, than another?

Of special points and questions, I could enumerate many more, in regard to which chemistry may be said to have been, or to be capable of becoming, of obvious money value to the farmer. Even to such of you, however, as have not much attended to this subject, the above ex-

amples will sufficiently indicate both the kind of connection which exists between practical agriculture and practical chemistry; and the kind of uses to which such scientific knowledge may hereafter be put, in advancing the important art, which it is the first wish of this great Society, and the individual interest of many of its members most zealously to promote.

LIMITS OF HUMAN SKILL.—But in dwelling upon and illustrating what is already in the power of man, and what he hopes to attain in reference to agriculture through the aids of science, I would not forget to acknowledge how very limited his knowledge is, and how feeble his capacities after all.

A mysterious fungus attacks the potato, and for years spreads famine and misery, and discontent and depression, among millions of industrious farmers.

A minute fly, season after season, hovers over our wheat fields, and from entire provinces and states almost banishes the cultivation of our most important grain.

A long continued drought, such as half a century past has scarcely seen, dries up our meadows and pastures, and drives the farmer to his wits end, to obtain winter sustenance for his necessary stock.

Such things as these ought to prevent us from boasting of our knowledge, and to enforce upon us that piety and humbleness of spirit, which rural occupations themselves so naturally foster—while at the same time they should not restrain us from any effort or enquiry by which the evils themselves may be mitigated or removed.

It is possible—nay, it is almost within the bounds of a reasonable expectation—that the same intellectual research which has given us dominion over the proud waves—has made out the laws by which hurricanes are regulated—has

already almost freed us from their most fierce influences—and has forced the fiery lightning to descend harmlessly from heaven—that the same research may finally free us from the visitations of the fungus and the insect, and may place the dreary droughts of summer under reasonable control. Such hopes we may entertain, not as sources of pride, but as stimulants to exertion—for in so greatly rewarding the past exercise of our intellectual powers, the Deity obviously intends still further to excite us to study and extract good from the living and dead things of nature, over which he has given us a general dominion.

OBSTACLES TO PROGRESS.—There are, however, in every country, certain obstacles which oppose themselves to the progress of scientific agriculture, as a branch of knowledge, or to its practical application in the improvement of the soil.

I do not refer to those physical or local obstacles of climate, elevation above the sea, low prices, distance from markets, and so on; but to those social and class obstacles which, in so many places, and in so many ways, interfere not only with the rapid extension of our knowledge, but with the diffusion of what we already possess as to the application of science to the rural arts. I may enumerate as belonging to obstacles of this kind:

1st. The aversion to theory, as it is called, which is so generally professed by practical farmers in most countries of the world. Rash and hasty theorising in regard to agriculture, it is right to reject; the error lies in confounding with such theory every thing that does not appear to bear directly upon the more common operations of the farm—as if chemistry, or the chemist for example, could be of no use to the farmer, because he does not interfere with the handling of the plough—or with the shape and management of the drill machine, or the harrow.

2d. The small amount of talent hitherto in all countries considered necessary to fit a man to become an excellent farmer. This not only lowers the general education and attainments of the agricultural class, and the estimation in which they are held—but it unfits them, as a body, readily to appreciate the labors, or to listen to the counsels of men of science, however prudent and practical they may be.

3d. The special deficiency, among all grades of the agricultural community, (in England among landlords, among tenants and among laborers,) of any instruction in the elementary parts of those branches of knowledge by which the principles of agriculture are especially illustrated.

4th. The extreme sub-division of the land, which you may not see in this country for many generations, but which already exists as a great evil in some of the countries of Europe. It prevents the use of improved implements, and therefore the encouragement of agricultural mechanics—because the farmer is too poor to buy anything but the merest necessities. It prevents also the purchase of manures, natural or artificial, to any extent—the employment of paid labor in farming—and generally all those forms of improvement which demand an outlay of capital, or to which the occupation of a considerable breadth of land is a necessary pre-requisite.

5th. An obstacle peculiar to your country, and to its present transition state—and it is really a serious obstacle to improvement—is the feeble local attachment by which the proprietors of the more newly settled districts are bound to their farms. This appears in the fact that so many of your farms are for sale. Few families have yet become so attached to their locations as to be unwilling to sell them, if a fair offer be made. The head of the family trusts to his own skill to do better elsewhere for all his household, with the money for which they may be sold.

This state of things will pass away as age creeps over your commonwealths and institutions, but in the meantime it operates as a serious hindrance to the expenditure of money in embellishment or in costly improvements, which might possibly not enhance, in a proportionate degree, the value of these properties in the market.

I merely mention these social obstacles, for although some of them do, as I am informed, exist to a certain extent in this State of New York, yet I would rather express my high opinion of the much good I have found among you, than appear to detract from your just deserts, by discovering and commenting upon wants and defects which in your hurry to get forward, you have as yet scarcely had time to discover, much less to supply or remove.

ENCOURAGEMENT TO AGRICULTURAL SCIENCE IN THE UNITED STATES.—Of the good I see, for example, I may specify the enlightened desire exhibited by your several *State governments*, to promote the applications of science to your home agriculture, as it is strikingly shown in the numerous surveys and reports which they have caused to be made and published, in respect to the geology and agricultural capabilities of the several parts of the Union. In this respect your State of New York occupies a most distinguished position, and its inhabitants will no doubt reap from their well directed exertions, a rich harvest of deserved fruit.

Again—this great Agricultural Fair, the implements and stock here exhibited, the countless numbers who have entered the show yard to see them, and who now surround us—impress upon a foreign visitor, the obvious usefulness and efficient management of your Agricultural Societies, how much they are doing, and how zealously they are sup-

ported. To those at a distance, who cannot look upon you with their own eyes, your annual publications speak. I have myself been both interested and instructed by the former volumes of the Transactions of your Society, and I have heard them, in a public meeting in Scotland, most highly spoken of, and favorably contrasted with the published proceedings, even of the Highland and Agricultural Society of Scotland. It gives me pleasure to express my opinion, that the volume for the present year is not only equal to its predecessors, but contains matter highly creditable to the Society, and useful to the advancement of scientific agriculture.

Farther—The interest which, as individuals, you take in the promotion of agriculture, by the acquisition and application of new knowledge, may be gathered from two circumstances—*first*, from the establishment and liberal endowment of chairs of science in connection with agriculture, by private parties, in two, at least, of your state universities—a liberality at once most patriotic and most judiciously applied; and *second*, from the causes which led to the recent visit to Europe of your countryman, Mr. COLMAN. Him we were led to look upon as a deputy from the individual farmers of this and the adjoining states, to the farmers and agricultural assemblies of Great Britain—for it was your individual encouragement and subscriptions, I believe, and those of your societies, which induced and enabled him to come among us. As your deputy, he was every where received—every where kindly, I believe, as so kind hearted a man deserved to be—and every where with a desire to give him the fullest information on every subject that might be useful to you.

Gentlemen, in the minds of some of your countrymen whom I have met, not so I hope in yours, a wrong

impression exists as to the feelings of my countrymen towards you as a community, or as individuals. We do not envy or regret your rapid growth and prosperity as a people—we are proud of it. We do not dislike you individually—we are predisposed, rather, to see good in you and to like you. Whatever sour men on either side of the water may say, you may rest assured that there is a corner in almost every heart at home, which especially warms towards the North American, whether from the Colonies or from the States, and a warm seat at many a fire side, if he will come and occupy it. It may be old fashioned, gentlemen, but we all still think at home that blood is thicker than water, and if any of you doubt it, we beg you, like Mr. COLMAN, to come among us, and honestly and frankly to try whether it is so or not.

If I were asked to give a special reason why a knowledge of the scientific principles of agriculture is more necessary among you than among any other existing people, I would mention the great extent of your territorial dominion, and the varied soils, climates and cultures, which your people encounter, as your dominion over the forest and prairies extends. When you take this fact in connection with an other, which is no less familiar to you, that a general set of your population, like a great moving tide, is carrying them towards the south and west—so that the old tillage and crops of one year are often deserted by the mover for a new form of tillage, and the culture of new crops in the next—you will see how useful to the shifting agriculturist himself it must be, and how beneficial to the whole community, that he should possess some degree of familiarity with those principles, not only of Geology to which I have already made especial allusion, but of Chemistry and Botany also, which shall enable him in whatever circumstances of soil, of climate or of tillage he is placed, to make

the most of the advantages he happens to possess—to overcome most easily and most economically the difficulties he may have to encounter—and to employ at once his head and hands with skill in bettering his local condition.

As an agricultural people, you possess many advantages over the nations of Europe. You are not old enough to have acquired district and state prejudices, which are difficult to overcome, and which in many parts of Europe, long oppose, successfully, the importation of improvements from abroad.

I may mention, as a most intelligible illustration, the introduction of implements imported from other countries, which in Europe is a very slow process. The swing plough of Scotland, for example, has made its way into many districts of England, has been extensively introduced into some parts of France, Holland, Sweden, and even into Poland and Russia. But into Germany, where attachment to the old tools and methods is so very strong, it makes its way very tardily. And I advert to this instrument—this fundamental instrument, I may call it, of the practical farmer—because I find it mentioned to your credit, by a German writer, that the swing plough has had a much more willing and ready reception among you than among his own country men, and that Germany has already received many excellent swing ploughs from America.* I have seen plough irons of Scottish manufacture, in use in various parts of North America. It is said that plough irons in considerable quantities are now exported from the States in considerable numbers to England.

Whatever is good in other countries, you are very much in a condition to adopt at once. You have, as I have said, fewer old forms to break through, old methods to abandon,

* *Ueber Englische Landwirthschaft von A von Weckherlin. Stuttgart, 1845, p. 81.*

old tools to lay aside, and old rules and regulations to abolish. Above all, as proprietors, you work every man for himself and for the profit of his family. Not only are feudal superiorities, servitudes, serfdom and tithes, unknown among you, but even rents are not, as with us, to be made up on two dark days of every year. What ought to stand in the way then of your rapid progress in this most important art?

Another great advantage possessed by the agriculturists of this country, you will both understand and estimate. As a nation you commence your agricultural career at the point which we have attained. The eminence which we have reached after long climbing, you start from. You have the benefit of all our knowledge and experience, and—unwearied with previous labor, or satisfied with the idea, as too many of our farmers are, that you have already done very much—you must progress beyond what we have at present attained to. And with the intellect and energy you inherit, you must and will progress. It cannot fail indeed to prove a great blessing to mankind at large, that so many new minds, unfettered by old restraints of prejudice or partial legislation, or conventional custom, are now directed in this country towards the varied arts of social life. Especially must intellectual exertion on your part, in reference to any of the arts of life, benefit us in Great Britain—whom a common parentage, individual ties of blood, and a unity of speech, connect, and whom now the broad Atlantic, more than bridged over, almost brings together again into a common home. What you think, reacts upon our thoughts; what you speak, insensibly affects our speech; and your literature and ours, are read and have their influence in both countries. What each discovers sooner becomes property of the other, than in the case of nations who speak different tongues; and a step in advance on either side of the

Atlantic, carries the arts of the other side along with it. We are not selfish—perhaps I might say we are eminently unselfish—in wishing you to become agricultural improvers. But of all the arts, it may be said more truly of agriculture than of any other, that it is of no country. The producer of the common staff of human life, ought in all its perfection, to be the common property of all. In rivaling each other in our endeavours to push forward this highest art of life, Britain and America will be striving only which can do most for the human race. And if we in Britain should benefit hereafter by the advances you are destined to make,—beyond what you have obtained from us,—it will enable us only the more speedily to aid in diffusing a knowledge of these advances among the other nations of the globe.

What is the moral of this discourse, what its immediate application to you whom I have the honor to address?

Is there improvement any where—let it be seen among you. Is there agricultural progress any where—you ought not to stand still. Are there means of bettering the modes of culture any where—you possess the same. Is there greater knowledge any where—it is within your reach. Is there energy and determination any where—these qualities are inherited in as great strength by you as by any other people. Is the climate favourable any where for special kinds of culture—you possess all climates, and may take a leaf from the farming book of every country. Is knowledge necessary any where—it is so among you; if not because of an over-crowded, yet because of a constantly moving, and at present rather retrograde agricultural population.

And if in consequence of its progressive tendency, the Teuton blood of the Anglo Saxon shade, is destined, as some believe, to conquer and possess this vast continent

from sea to sea ; it is surely the wish and purpose of the Deity, that such possession should be made a source of happiness both to the ruling and to the ruled, and a means of furthering at the same time, that general advancement of the human race which all philanthropists so ardently anticipate.

But this conjoined happiness and progression demand the constant aids of augmenting knowledge. In your western migrations, you must bear with you, to plant on your new soil, the arts and sciences and daily discoveries of the east ; and thus will population and civilization extend together to the shores of the wide Pacific.

And among the branches of knowledge which you will most usefully carry with you, those which relate to the arts of rural life, will, above all others, contribute largely to the temporal welfare of your spreading people. That which we know in England, you soon learn to master and apply here ; and what is known in the Empire State, ought, in like manner, to diffuse itself hence over the vast dominions of your great confederacy.

Though I have considered it my duty, in conformity with your request, to lay before you the observations I have put together in the present address—it would be presumptuous in me, after what I have seen in this show-yard, and in this city, to suppose that any thing I could say, would materially hasten the progress of agriculture among you, or turn you into any better paths than those you have already begun to follow. If any man wishes an evidence of what you are in energy, and what you are capable of in action, let him come to Syracuse, and look around him. It was brought as an accusation against the ancient Romans, that they made a country desolate, and called that peace. It is the nobler praise of the great modern Republic, that you find a country desolate, and cover it with people—a wilder

ness, and you plant it with fertile farms—furnished with rare wigwam encampments, and you strew it over with splendid palaces and great cities. Energy, discernment, constructive talent and administrative skill, must all be united to accomplish such results; so rapidly, so safely, so securely. I thank you for inviting me to come among you, that I might see all this, and might enjoy the gratification which the sight of progress of such a kind imparts. It will be to me a source of future satisfaction, if I shall be able, on reflection, to believe that my visit to your country has in any way contributed to the further or more safe advancement among you of that pursuit, which is the surest support of nations—whether in the Old World or in the New.

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