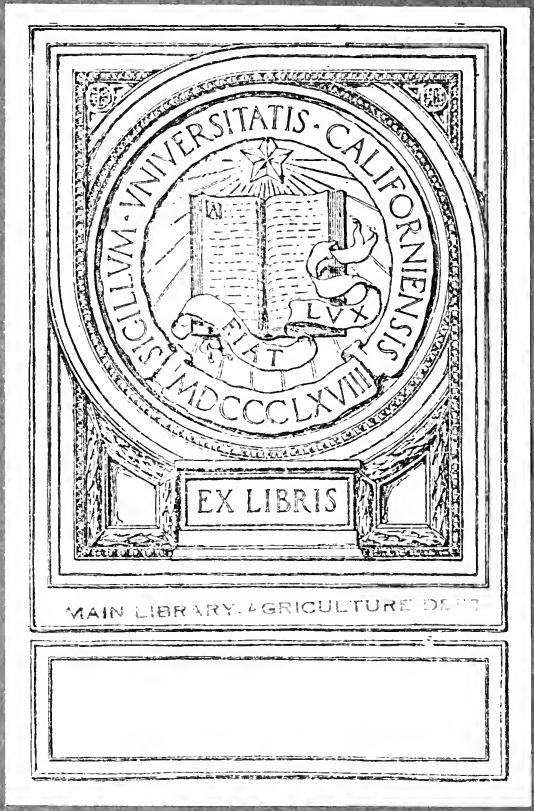

THE

IMPERIAL AGRICULTURAL COLLEGE

OF

SAPPORO,

JAPAN.

BY

INAZO NITOBE, A.M., PH. D.
PROFESSOR.

PUBLISHED BY
THE
IMPERIAL COLLEGE OF AGRICULTURE
SAPPORO.

1893.

THE IMPERIAL AGRICULTURAL COLLEGE OF SAPPORO.

The War of Restoration over, the Japanese Government turned its attention to more peaceful pursuits. It began to divert the overflowing energies of the warrior class and the superabundant strength of the oppressed peasantry into new channels of industrial warfare and conquest. A field well suited for enterprises of this kind was not wanting. For some years preceding the Restoration (1868) foreign relations had been forced upon Japan; and the contact with Russia in diplomacy brought vividly to mind the fact that the northern extremity of our Empire touched one end of the Czar's vast dominion. The northern islands of Japan, vaguely called Yezo, were for centuries a terra incognita among the people: all that was told about, and unfortunately most readily accepted by them was that the region was the abode of a barbarian folk known as the Ainu, and that it was a dreary waste of snow and ice, altogether unfit for inhabitation by a race of higher culture.

To Yezo, then, at once the northern frontier of the Empire and a land endowed with magnificent natural resources as yet untouched by human hand,

the new Imperial Government wisely began to extend its fostering care. A colonial office, entrusted with the work of developing the resources of the Islands (thereafter, i.e. from the 23rd of August, 1869, denominated the Hokkaido) and of defending them against possible attack from a foreign power, was organized on the 16th day of August, 1869, under the name "Kaitakushi." Appointed Vice-Governor in the summer of 1870, General Kiyotaka Kuroda, now Count and Minister of Communications, soon proved himself the *de facto* governor. He was charged with the task of setting the new office in motion. A man of great insight and of indomitable will, he betook himself to the work with characteristic zeal and earnestness. Two months after his appointment, in his reply to His Imperial Majesty's question as to his colonial policy, he dwelt upon education as a most potent factor in advancing the interests of the Hokkaido. Again three months later, he dwelt elaborately and emphatically upon the same theme, and prevailed upon the Government to send abroad some young men, in order that they might be prepared for the undertaking of civil service and pioneering labor. He saw that the fertile virgin soil could be made to yield its richest treasures only under wise management. But where should he seek for wisdom? Japan had long since forgotten the art of breaking up new land; her agricultural system was too intensive to be applied to a newly-opened country; her mining operations were too primitive to be followed on an extensive scale. In General Kuroda's mind there was one source whence he could expect wisdom and knowledge pertaining to

new settlements; and that was America. Thither, therefore, he himself proceeded in the fall of 1870. He studied the rapid and wonderful progress of colonization in that country, and thought that the *modus operandi* at work there might well produce similar results in Japan. The simple adoption of American methods without trained hands to rightly direct them, would merely amount to an apish trick. His appreciation of education now rose higher than ever. What particularly struck him as a remarkable trait in American civilization was the immense influence which women wielded there, and the healthy tone it imparted to the society in general. Returning in July, 1871, he presented a memorial to the Government, to the effect that the work of pioneering was not confined to the opening of rivers and mountains, nor even to the augmenting of population, but that it must take cognizance of the all important labor of fostering human talents, of training youthful minds—in one word, that the first great aim never to be lost sight of in founding a new colony, must be to provide itself with men and women, properly equipped to become the leaders of a pioneering population. He closed his memorial with a suggestion to send abroad some young girls, who might some day become mothers in the infant colony. The suggestion was carried into practice, and several girls were taken over to America.

Pursuant to his plan of education, General Kuroda started a germ of a school in Tokyo under the patronage of the Kaitakushi. On the 21st of June, 1872, it was ready to receive students. It provided two courses, a general and a special. The latter embraced

the rudiments of knowledge, the former included departments in Physics, Mechanics, Mining, Geology, Architecture, Surveying, Chemistry, Botany, Zoology and Agriculture. It was the design of the Kaitakushi to engage foreign specialists as instructors. This comprehensive scheme of scientific education—reminding one of a polytechnic institute—was, however, not carried out. Agriculture was really added to the curriculum for the first time in 1874, while the rest of the sciences enumerated above were never pursued to any extent. Most of the young men, who had been sent abroad, and who might have become teachers, came sadly short of the general expectation.

The introduction of Agriculture was an earnest of the future development of the school into an Agricultural College. Interesting as the task may be, we can not follow in this place the career of the Girls' School, which had also been opened in Tokyo since October, 1872. Suffice it to remark that in the year 1875 both schools were removed to Sapporo. This town counting then a population of not more than eight thousand, had been newly laid out in regular squares after American fashion, and was to be the capital of the Hokkaido. Sapporo is situated in a fertile plain of the valley of the Ishikari River, a branch of which, the rushing stream named the Toyohira, runs through the eastern portion of the town, supplying it with all the needed water. West of the town stretches an irregular mountain-chain, affording a pleasing break in the otherwise monotonous scenery; for on every other side the eye sweeps over one wide expanse, unbroken for miles until it

can catch of a clear day the summit of the Optateshike Range glimmering far away in the east. The atmosphere of this portion of Japan is clearer and drier than that of the main islands; the climate is bracing and salubrious. Mother Nature here is well calculated to nurture youthful souls, and to endue them with the love of study and the love of work. Removed to the new surroundings, the school (let it be noted here in passing that the girl's school is now out of our consideration) did not remain long an institution of a secondary grade, as the sequel of our narrative will show.

When General Kuroda visited America, he was given authority by the Imperial Government to negotiate with the Government of the United States for the services of any one, whom he might choose as counseller in his work. The choice fell upon General Capron, the Commissioner of Agriculture at Washington. Satisfactory arrangements being made, Horace Capron, with the title of Commissioner and Adviser to the Colonial Office, followed General Kuroda to the Hokkaido. It was through his instrumentality that so many American crops, animals, machines, etc., were introduced into, and are still used in, the Island. What nearly concerns us at present in his career, is the fact, that under date of January 2, 1872, in what he calls a preliminary report, drafted soon after his arrival, he suggests the establishment of an agricultural college in Sapporo. He says;—"It should be the endeavor of this Government to establish by every possible effort, scientific, systematic and practical agriculture. In no way can this be done more effectively or eco-

nomically than by connecting with the gardens at this place (Tokyo) and also with the farm at Sapporo, institutions at which shall be taught all the different branches of agricultural science. These institutions should have well appointed laboratories, and should be supplied with professors of acknowledged ability in their several specialities."

This recommendation so exactly coinciding with his own educational plan, strengthened the General in his determination to make his idea a reality at an early date. The Japanese Minister in Washington was asked to secure the service of a man thoroughly competent to equip and manage an agricultural institution of high grade. Hereupon the State Agricultural College at Amherst, Mass., being considered the best conducted of its kind, its President, William Smith Clark, was nominated for the work of organizing a sister institution in Sapporo. The trustees of the College in Massachusetts kindly consented to loan their President for a year. President Clark and his two assistants arrived in Sapporo in the summer of 1876. He went immediately into his work with his wonted energy, revising the curriculum of the school and raising it to the level of what would correspond to an average American college. The institution was, as it were, reborn and christened "The Sapporo Agricultural College."

It was auspiciously opened on the fourteenth day of August, 1876, with twenty-four students, representing all the main islands of the Empire. The faculty consisted of the Hon. Hirotake Dsusho as Director, of Wm. S. Clark, Ph. D., LL. D., as President of the College and Director of the College

Farm, Wm. Wheeler, C. E., as Professor of Mathematics and Civil Engineering, David P. Penhallow, B. S., as Professor of Botany and Chemistry, Seitaro Hori, Secretary and Interpreter, and of K. Yoshida as Farm Overseer. The arrival soon after of William Penn Brooks, B. S., as Professor of Agriculture and successor to Dr. Clark as Superintendent of the Farm, was an important addition to the teaching staff.

The number of students was restricted to fifty on account of the limited appropriations made by the government. All the successful candidates were to be educated at government expense, board, room, clothing and stationary all included. Such an arrangement was necessary at the time, seeing that the life and work in the Hokkaido offered but little attraction in the form of any immediate return. Moreover, as the primary aim of the institution was to train select young men for civil service and as far as possible to make their residence in the Island sure, an obligation was in this way imposed upon them. As to the mere number of students, therefore, it was only of subsidiary moment. The successful candidates for admission were required to sign an agreement with the authorities to serve in the Colonial Office for five years after graduation, and to transfer their domicile from their respective provinces to the Hokkaido. The course of study (which will be given in details in another part of the paper) covered four years, and comprised those branches of knowledge which were deemed necessary to make efficient officials and exemplary pioneers. As published in the Plan of Organization, "It was the aim

of the College to qualify its students for intelligent and effective work in the administration of business, and in those departments of industry and technical science pertaining to agriculture and the development of natural resources, manufactures, and the maintenance of an advanced civilization; also to promote conceptions of their relations to the state and to society, and of self-culture befitting their prospective stations." As thus defined, the College was by no means strictly agricultural; and to have called it so was nothing short of misnomer. Its real object was, as we see, much broader and approached in fact to a school of cameralistic science, which was so eagerly pursued in Germany during the latter part of the last, and the beginning of this century. Did Frederick William I., the "Economic King," institute special chairs of cameralistic science at Halle and Frankfurt chiefly from the motive of training public servants for the economical management of royal estates, so did Count Kuroda found at Sapporo a College with the similar intention of preparing officials for rightly husbanding the resources of public domains. In both cases the starting point was the watchful solicitude for the public economy of the country. In neither case did the cameralistic science long continue a distinct and independent branch of learning: in Halle it was dissolved into Agriculture and Dendrology, Administration and Political Economy, while in Sapporo it was concentrated to Agriculture. This is not to be wondered at, when we remember that the main aim and value of the cameralistic science was essentially of practical character, and what must be

practical has widely different interests from what is to be scientific. An education, in order to be of practical use in a new country, must needs be more comprehensive than profound: it can afford to become special only as that country grows older. This truth is well illustrated in the development of our College curricula, as will be evident from a glance at the list of College studies of 1876, given elsewhere in this paper.

Attached to the College, and forming an integral part of it, was the Preparatory Department, where boys over twelve years of age might be admitted and prepared for the collegiate course proper.

An important adjunct to the College was a tract of some two hundred and fifty acres of government land lying a mile north of the College. Nearly one half of this area had been opened before it came under the direct control of the College, while the rest consisted of wild and forest land. Experiments, scientific and practical, could be made on this ground. President Clark caused to be erected on it, a model barn which was the first of its kind not only in the Hokkaido but in the whole Empire. The building was of spruce wood, the foundation being of seasoned timbers from oak and elm trees, which were abundant in the vicinity. The ground floor was in dimensions 100×50 feet, the hight of the posts from the ground to the eaves 25 feet. No efforts were spared to make it an object worthy of imitation among the farmers of the country. The barn was provided with a well constructed cellar, over which was the floor for horses and cattle, while the floor above was to serve for the storage of hay. Much of

the Hokkaido being possible of development as a fine grazing country, and the weakest feature in Japanese agriculture lying in its disregard of stock husbandry, the erection of a model barn was a stroke of practical wisdom on the part of Dr. Clark deserving of all praise. It was soon supplied with native horses and cattle, and several Shorthorn cows. Vehicles, machines and implements, as well as seed corn and grass seed of different varieties, were ordered from America.

Having brought to satisfactory consummation the two main duties, which he had undertaken,—namely, the organization of the first Agricultural College in the Orient, and the erection of the first barn in the most approved American style,—Wm. S. Clark left Sapporo in the spring of 1877 to resume his post in Amherst. President Clark's work in Sapporo did not end in merely inaugurating the College and constructing the barn. Far from it! He left behind him a memory not easily to be effaced. That manly spirit he instilled into young students at the age when they were most susceptible of external influences, was not to be easily forgotten. Of lasting benefit to those, who came in close personal contact with him, was that invincible energy, which was his —and without which, it is said, neither circumstances nor talents can ever make of a two-legged creature a man.

Dr. Clark's two colleagues and assistants remained behind to carry on the work he had so ably initiated, in the lines he had marked out for them. Professor Wheeler, upon whom the presidential mantle fell, rendered to the Colonial Government, besides the

performance of his College duties, valuable services in surveying and engineering. Professor Penhallow was instrumental in improving the process of tanning; he studied also most assiduously the different kinds of textile fibers produced in the Hokkaido.

In the course of the second academic year (1877–78), the chemical laboratory was completed and furnished with the necessary apparatus and specimens. In this year, too, an important acquisition was made to the College in the form of the Plant House, which had been built and managed under the Agricultural Bureau of the Kaitakushi, and from which it was now transferred. Professor Brooks, who had arrived in the meantime, carried on various improvements on the College Farm, building a corn barn, draining the cellars, and so forth. It was about this time, also, that the nucleus of a museum of Natural History was first formed from specimens collected by the professors and students during their vacation excursions. Almost simultaneously was founded a more pretentious museum in another part of the town under the direct auspices of the Colonial Office. Later on, as we shall see, these two repositories were combined and the result was a more excellent institution.

The third academic year (1878–79) opened with the full number of students, which the College could well accomodate—namely fifty. It was memorable for the completion of the so-called Military Hall, the dedication of which took place on the sixteenth of October, 1878. This building afforded in its upper floor room for a drill hall and an armory, while its ground floor served for a museum and the wings for

lecture rooms. It was also furnished with a tower and clock which served the purpose of a municipal horologe. A complete outfit of physical apparatus, a large purchase of chemical instruments and reagents, the acquisition of a fine microscope and spectroscope, important additions to the library, the accession to the faculty of John C. Cutter, M. D., as Professor of Physiology and Comparative Anatomy, of Cecil H. Peabody, B. S., as Professor of Mathematics and Mechanics, of Lieutenant Kato as Military Instructor, of Michimasa Miyazaki, B. S., as Chemical Assistant,—all these, to borrow the words of President Wheeler, were a proof that "the material needs of the College for carrying out the routine of study and training, prescribed under the present system, have been, in the main, provided for." "The institution" he continues "has passed the formative stage, and is now possessed of all the important requisites for its legitimate work."

It is interesting to note that in this the third year of its existance the first change was made in the curriculum of the College. The time devoted to Zoology, during the first term of the Junior Year, was increased from three to six hours per week, and that given to English composition and elocution reduced from four to one hour each week. These changes, perhaps not so very important in themselves, were significant of the spirit and inclination of the institution to eliminate whatever was not vital to its sphere as an Agricultural College and to grow more and more true to its name, until it should attain its specific character.

Another feature of the same period worthy of our

notice, was the first attempt made at the publication of a College Journal. The "Sapporo Nogakko Hokoku-sho" was a small monthly bulletin, edited by the students and published under the patronage of the College, with the laudable object of diffusing scientific information relating to agriculture. Nor must we omit to mention in connection with the College work the first agricultural fair ever held in the Hokkaido occurring in October, 1878, at the instance of Professor Brooks. It proved a decided success and gave an impetus towards the holding of like exhibitions in subsequent years.

During the succeeding collegiate year (1879-80), another step in the differentiating process of the College curriculum was taken, in that Mental and Moral Science was dropped from the course to be replaced by History of Philosophy; but for lack of adequate text book, Philosophy of History was chosen to take its place. From the latter to the Political History of Europe was an easy transition. General History played an important part in the curriculum until the year 1891, when it gave place to History of Agriculture.

By far the most material change in the plan of the institution was made about this period. Up to this time the number of students had been limited to fifty, and the expense of education entirely defrayed by the Government; but the reformed plan was to the effect that the number of students should not be limited, and further that they should be responsible for their own expenses. Provision was made at the same time for assisting such young men of limited means as were worthy, by the Govern-

ment advancing the needed money, on condition that they should return, after graduation, the debt so incurred in regular instalments. This liberal provision was of wide application, and was eagerly taken advantage of. But as the dormitory, the chemical laboratory, the lecture rooms, etc. were constructed to accommodate not more than fifty, the actual number of attendants at any one time could never exceed that total to any large degree. No new admission of students had been made until the pioneer class was graduated in the summer of 1880. This class originally twenty-four strong, dwindled to thirteen by the time they reached the end of their collegiate career. Upon them was conferred the degree ef "Nôgakushi," literally "Batchelor of Agriculture," and they were soon employed by the Kaitakushi in different capacities according to their varied aptitudes, but all of them connected with agriculture, engineering and education. This band of young educated officials, the first fruits of the institution, was reinforced the following year by a fresh supply of ten graduates, who, too, found their calling awaiting them in civil service.

The only fact worth mentioning in particular in the record of the year 1881, was the promotion of Genzo Mori to fill the chair of Director vacated by the resignation of the Hon. Dsusho. Mori remained in office until 1886. Let it be stated here that the Presidency was successively assigned after Wheeler to Penhallow and Brooks; the latter occupying that position from August, 1880, until the day when that office was absorbed in 1886 in that of Director.

The history of the College since 1882 has been

one of varied experiences. Originally a creation and ever since a protégé of the local Government of the Hokkaido, the College had to undergo the same vicissitudes, to which the local administration might be subject. We shall now proceed to cast a cursory glance at the changes, which followed one after another in quick succession in the experimental administration of the Island.

Judged by the fruits of its labors, covering a period of more than a decade, the further continuance of the Kaitakushi was deemed unnecessary; and it was decided by the Government that this unprofitable branch of administration should be removed. This decision was welcomed by the people, very few of whom really knew what had been done in the Hokkaido, and scarcely any of whom had any notion what pioneering meant. The Kaitakushi expired formally in February, 1882. The College survived this political catastrophe, having been adopted, as it were, for the time-being by a bureau in the Department of Agriculture and Commerce. It was arranged that this Department, which had its headquarters in Tokyo, should look after the agricultural interests of the Island, while the general administration was to be attended to by the three prefectures (Kens) now established in Sapporo, Hakodate and Nemuro. A year later, i. e. in February of 1883, a subdivision in the Department of Agriculture and Commerce was created under the name of Kanri-Kyoku (Bureau of Supervision), and the College was placed in its charge. It so continued, until its new protector was consigned to annihilation in the summary reforms of 1886, whereby

the Kens vanished to give place again to a uniform administrative organ, the Hokkaido Cho. The College was then placed under the new authority.

At last by an Imperial Ordinance issued in December, 1886, the College was put on a firmer footing; but its position was a unique one, since it was placed under the joint jurisdiction of two authorities. As far as the business part of the institution was concerned, it was to be directed by the Governor of the Hokkaido; but as relating to the personnel of the faculty and the instruction, the Department of Public Instruction was to exercise the right of supervision.

In March of the following year, Shosuke Sato, Ph. D., who had been appointed Professor four months before, was made to act as Director until a person be found to fill the latter position. Dr. Sato was well calculated to occupy the chair of Acting Director, being himself a graduate of the College in the pioneer class, and having afterward pursued his agrarian studies in the Johns Hopkins University, Baltimore, U.S. While in America, he distinguished himself by a monograph in English on the "Land Question in the United States." Under his administration, the College saw great and important changes. The field of its instruction was so enlarged as to include different collegiate courses and different grades of agricultural study. The two main courses or rather departments of the College proper were those of Agriculture and Civil Engineering, leading respectively to the degree of Nogakushi (Batchelor of Agriculture) and Kogakushi (Batchelor of Engineering). The Preparatory Department was

continued with a few changes which made its course higher and more comprehensive. There was also formed a Practical Course in Agriculture, to train some of the younger generation of Hokkaido farmers in the use of improved machines, the care of live stock, the rudiments of agricultural science, etc. Any more detailed account of these different courses of instruction necessarily relates to the present standing of the College, and we will defer it until we shall have treated in chronological order the events, that transpired between 1886 and 1892.

To briefly enumerate, then, the main events of the period, great improvements were made since 1886 in the museum and the Botanic Garden, both of which were assigned to the College the previous year. The former is a nice two-story frame building erected independently of the College Museum in 1882, and has been the repository of a rich mineralogical collection made by Benjamin S. Lyman, of specimens of Ainu relics and utensils, and of a large number of stuffed animals representing the fauna of the Hokkaido. The Botanic Garden, beautifully situated in the westerly part of the town, consists of grounds with a gently undulating surface, through which meanders a murmuring brook of the freshest water. Here and there are still standing in their pristine dignity some solitary elm trees, majestic survivors of the forest primeval that once covered the Island. The whole garden with an area of over thirty acres, serves at present as a public park. A part of it is laid out in parallel rectangular beds planted with different kinds of trees and herbs, arranged in natural order, so as to give an excellent idea

of the general characteristics of the Hokkaido flora.

Among the events of the year 1886, mention may be made of the departure of two of the graduates, Kingo Miyabe of the class of 1881 and Sho Watase of the class of 1884, for America. Destined to become Professors of the College, they had both been sent to the Imperial University in Tokyo to further prosecute their studies in Natural Science. They were now dispatched, the former to Harvard to study Botany under Farlow and Goodale, the latter to Johns Hopkins to complete his zoological researches under Martin and Brooks. It is but just to mention that they did credit to their alma mater by the service they rendered to their respective sciences. Miyabe, who received the degree of "Doctor of Science" in Cambridge, published the result of his investigations in the two papers, "The Life-History of Macrospolium parasiticum, Thum.," and "The Flora of the Kurile Islands." Watase, Ph. D., of the Johns Hopkins, now Assistant in the new Chicago University, made his work public in several scientific publications, among which we may note here the principal ones, which are "On the Anal and Caudal Fins of Gold Fish," "Observations on the Development of Celopholopods," "On the Morphology of the Compound Eyes of Anthropods;" "On Caryokinesis," etc.

To make the faculty still more complete, two more young men were the following year commissioned to prepare themselves for future Professorships. They were Isami Hiroi and Inazo Nitobe, graduates of the class of 1881, both of whom were in America at the time of their appointment. Hiroi had been

engaged for several years in engineering work in America, for some time as a member of the Mississippi River Commission in St. Louis, and at another time in the Iron Bridge Works at Edge Moore, Delaware. Appointed Associate Professor of the College, he was now ordered to complete his engineering studies in Germany. He studied in the Royal Polytechnic Institutes of Karlsruhe and Stuttgart: in the latter he took the academic degree of "Civil Engineer." The other, Nitobe, had been studying successively after his graduation in the Imperial University and in the Johns Hopkins, his inclination being towards History and Economics. While he was studying in Baltimore, the appointment came, together with the order to proceed at once to Germany, there to devote three years to the study of Agricultural Economics and Administration. He studied in Bonn, Berlin and Halle, taking his degree of A.M. and Ph. D. in the last mentioned University. His published works are, besides magazine articles, a German monograph on the Landed Property in Japan, and a book written in English on the Intercourse between the United States and his country.

It would be some years before these young men could be ready for efficient work. Meanwhile the College had to go on in the lines it had marked out for itself. Other specialists must be engaged to carry on the programme. Accordingly in the spring of 1887, Giyemon Sudo, a graduate in Veterinary Medicine of the Komaba Agricultural College, was called to Sapporo to fill the chair vacated at Dr Cutter's return to America. The two years' contract of

H. E. Stockbridge, Ph. D., Professor of Chemistry and Geology, expiring in the spring of this year, it was renewed for another fifteen months.

The changes in the Faculty were not the only features of this period. Material acquisitions of no mean proportion were made to the College. A respectable lot of two hundred and twenty-five acres, including an unusually picturesque pasture land, had formerly been a Government Seed Farm. It was now appropriated to College use.

But by far the most important, indeed the epoch-making event of the collegiate decennium (1887-88) was the commencement of the Engineering Department. It was inaugurated with no more than five applicants, and instructors temporarily appointed. At this crisis there was a dearth of properly qualified Professors in this Department; for the College had just lost in the resignation of Kano Tachibana, B.A., for over five years in charge of Mathematics, an efficient teacher and engineer. A foreign professor was, however, soon engaged to take charge of Mathematics and Physics. Milton Haight, B.A., was a graduate of the Toronto University, and had afterward pursued his mathematical studies in the Johns Hopkins under Rowland and Newcomb. He arrived in Japan in 1888, and continued at his post as late as 1892, when he left for Canada. The same year that Haight arrived saw Brooks leave for his alma mater, where he was appointed Professor of Agriculture. Professor Brooks stayed altogether more than ten years in Sapporo. It was with reluctance on the part of College authorities, that his connection with the town, with the growth of which

he had so identified himself, was severed; but the valuable service he rendered, as well as the integrity and judgment he manifested in his work, is still held in high esteem.

The College had thus far been without a Director: but late in this year (1888) Bunzo Hashiguchi, an official in the Hokkaido Government, was appointed to the office, whereupon Dr. Sato was released from the Acting Directorship.

Brooks' successor had immediately to be secured. A proper person being found and a satisfactory contract signed, he was soon on his way to Japan. Professor Arthur A. Brigham arrived with his family in Sapporo early in 1889. A graduate of the Massachusetts Agricultural College, he was for several years engaged in practical farming, dividing his time between his farm and the State Legislature, of which he was a member. His contract came to end in 1891; but it was renewed and he is still at his post. Dr. Stockbridge left for America in 1889, and his place was filled by Toyozo Yoshii, a graduate of the Komaba Agricultural College in Agricultural Chemistry, and for a while Assistant in that institution. In this year the College welcomed the return of two of its graduates, Hiroi and Miyabe. The former was called back ere the appointed term of his stay in Europe came to end, as the Engineering Department was in sad plight for want of instructors. He slightly reorganized the Department, and added to the staff the following year Bunzo Sugi, C.E., a graduate of Cornell. The year we are considering witnessed two more developments in the plan of the College. One was the establishment of the Military

Department in the College proper for the benefit of the Colonial Militia, which had its headquarters in Sapporo. The other was a considerable addition to College land, as a tract of some 3273 acres was reserved for its use out of the Government forest in Yubari.

While the College had been thus advancing step by step toward perfection—from which, let it be observed, it is still afar off—large forces were at work, which might one day impede its steady progress. Whatever the new Imperial Parliament, which was to meet for the first time in 1890, might or might not do, this much, it had been expected and feared, it would not fail to contend, namely, the reduction in taxes. Its policy was in brief: If any Government Institution can be dispensed with, let it go; if not, let its expenses at least be cut down. Foreseeing this possible attack on all the state institutions of the country, a company of the College alumni met to discuss the ways and means, whereby to mitigate or if possible to avert such action against their own alma mater. "We believe," so runs the resolution in substance, "that our alma mater is an institution essential not only for the Hokkaido but for Japan at large, filling a unique position in the educational system of the Empire. It stands for the upholding of higher technical and practical education. It aims to train men for developing the physical resources of the country. In an age like this, when people only talk, and politics and law engross the attention of the rising generation, in a land like this (meaning the Hokkaido), which hides within its bosom inexhaustible treasures, technical

education is of inestimable value; and an institution equipped for this special purpose, must either be created anew or, better still, maintained if haply one already exists. Should, however, the public,—more especally the Parliament—fail to recognize the worth of our alma mater, and make any encroachment upon its appropriations, we must have whereupon to fall back for the source of its revenue." At this juncture it happened that, according to the policy of the Hokkaido administration begun by Governor Iwamura and continued by his successor General Nagayama, many a factory and farm originally started and for a time controlled by the Government was given away or loaned to individuals under certain specified conditions. The guiding motive for this new departure was to encourage individual and private enterprise. Taking advantage of this liberal policy, the Alumni Association applied for the College Farm and an additional land. From the moment the Association became possessed of property, it assumed its present importance and character. Till then from the time it was first organized on the return of Dr. Sato from America in 1886, it had been no more than an informal company of young men, who were wont to meet together occasionally for "social chats," to refresh their memory of the merry careless days they had spent within the walls of the College or on the campus, to

> "—remember all that one
> Could wish to hold in recollection ;
> The boys, the joys, the noise, the fun,
> But not a single Conic Section."

Indeed, how genial the very name of "Common

Hearth Club" sounds! For such is the Japanese rendering of the "Alumni Association."

But as has been hinted above, the possession of property brought with it grave responsibility and care. The piece of land, which was assigned to the College in its earliest days with the model barn upon it, including the stock, machines, etc., was handed over to the Association on condition that the same be kept as a model. Some money was likewise granted to aid in carrying on the work of improvement. Other lands lying in the neighborhood of Sapporo were also given. The Association was henceforth to hold and improve the estates, until the College should become empowered to own property on its own account, which provision is absolutely necessary to place education without the bounds of politics, and to assure science of its independence. As long as an educational institution is identified with political or any other interests, so long must it be liable to constant disturbance and hindrance. A change in the Cabinet may be followed by another in the Governorship, and this in turn may bring about undesirable changes in the faculty.

Notwithstanding some disadvantages under which the College had now to work, important changes were made during this year (1891). The reforms in the curriculum were a decided step in the differentiation of the College. Several branches of general knowledge were now relegated to the Preparatory Department. The reforms were far from being radical or complete; the ideal would be reached, if in the College proper only such knowledge as was essentially and organically connected with Agricul-

ture or Engineering were taught. In other words, let Political Economy be eliminated from the course, and Economics of Agriculture and of Transportation be put in its place. If literature is desirable, let us have, not miscellaneous belles-lettres, however well written or elevating, but rural essays and pastoral poems for the Agricultural Department. Such a specialization of the course is to be realized, if strict conformation to the name of the institution outweighs other and no less important, nay perhaps more important, considerations. A homely English proverb says, "Call one a thief and he will steal." Might we not say, "Call a school agricultural and it will turn out plowmen"? One is almost tempted to insist with Walter Shandy that there is much, in fact almost all, in names.

We have been tracing the gradual process, operating for over a decade and quarter, by which the Sapporo Agricultural College developed into a heterogeneous, specially technical institution, from a homogeneous condition which we have boldly suggested might be called cameralistic. How far the specialization has progressed, is evident from the table of curricula we have appended elsewhere.

From the curriculum of the Collge proper, that of the Preparatory Department may be judged with more or less precision. This Department aims at two objects—one of preparing young men for the collegiate course, and the other of imparting such general knowledge as is given in the Ordinary Middle Schools of the Empire; hence its curriculum is arranged only a little lower than that of the so-called Higher Middle Schools.

Having thus made a somewhat detailed examination of the past of the College, it behooves us now, before we close, to take a bird's eye view of its present condition, in as concise a manner as we can. The chief items of interest may be summed up:—

Firstly; the Faculty in the two Departments consist of

PROFESSORS.

Shosuke Sato, *Nogakushi* (Sapporo), Ph. D. (Johns Hopkins), Acting Director, Agricultural Economics and Colonization.

Arthur A. Brigham, B.S. (Mass. Ag'l College), Agriculture.

Isami Hiroi, *Nogakushi* (Sapporo), C. E. (Stuttgart), Civil Engineering.

Kingo Miyabe *Nogakushi* (Sapporo), S.D. (Harvard), Botany, Phytopathology and Microscopy, Superindent of Botanic Garden.

Inazo Nitobe, *Nogakushi* (Sapporo), B. A. *extra ordinem* (Johns Hopkins), A.M. and Ph. D. (Halle), Political Economy, History and Agrarpolitik, Librarian.

Bunzo Sugi C.E. (Cornell). Civil Engineering,

Takajiro Minami, *Nogakushi* (Sapporo), Principal of the Practical Department, Director of College Farm, Agriculture.

Masatake Oshima, *Nogakushi* (Sapporo), Principal of the Preparatory Department.

Toyozo Yoshii, *Nogei Kwagakushi* (Komaba), Chemistry.

ASSISTANT PROFESSORS.

Jiuro Teshima, *Nogaknshi* (Sapporo), Mathematics and Surveying.

Tatsusaburo Sase, *Nogakushi* (Sapporo), Chemistry, Physics and English.

Kashiji Kodera, *Nogakushi* (Sapporo), English and Zoology, Curator of the Museum.

Hiroshi Yamazaki, Chinese.

Sagoro Hashimoto, *Nogakushi* (Sapporo), Agriculture and Entomology.

Teiji Ishikawa, *Nogakushi* (Sapporo), Geology.

Sojiro Yokoyama, *Nogakushi* (Sapporo), „

INSTRUCTORS.

Sergeant Gengoro Makiwo, Military Drill.

„ Toranosuke Yokoyama, „ „

Yoshishiro Tanaka, Practical Agriculture.

Buryo Suzuki, „ „

Tokuji Terui, „ „

Masachika Komuro, „ „

Sojiro Murata, „ „

Bunkichi Okazaki, *Kogakushi* (Sapporo), Mathematics and Engineering.

Michimasa Nagata, Japanese.

Saburo Hatakeyama, Drawing.

LECTURERS.

Mototaro Adachi, *Nogakushi* (Sapporo), Sericulture.

Shunjiro Nozawa, *Nogakushi* (Sapporo), Fishery and Zoology.

Toragoro Obata, Veterinarian (Komaba), Veterinary Medicine.

Secondly,—The present number of students are in

	Ag'l Dep't	Engineering Dep't	Preparatory Dep't	Practical Dep't
1st year	21	7	36	21
2nd year	11	2	37	18
3rd year	8	3	40	—
4th year	15	2	30	—
5th year	—	—	26	—
	55	14	166	39

Altogether there are, therefore, two hundred and seventy-four students in the Institution.

Thirdly;—The annual expenses of running the Institution have been in round numbers thirty-eight thousand yen; but lately there have been constant and appreciable reductions.

Fourthly;—There were graduated from

	Ag'l Dep't	Engineering Dep't	Military Dep't	Practical Dep't
in 1880	13			
1881	10			
1882	18			
1884	17			
1885	12			
1887	9			
1888	17			
1889	17	—	—	47
1890	—	—	24	21
1891	7	2	—	23
1892	8	2	18	23
	128	4	42	114

Fifthly and lastly comes the most important question, "What have the graduates done"? "What are they doing"? In other words, "What has the College done?" "To what extent has it justified its own existence"?

We have already remarked that the first two graduating classes were immediately employed in civil service. It will be remembered that, when the third calss was graduated, the Kaitakushi was no more. The Kens could hardly afford to engage the young graduates, as they naturally demanded more remuneration than ordinary clerks. Only a part of the class remained in the Hokkaido, and the rest found their calling in other parts of the Empire. This ex-

odus, as it were, took a more decided turn, when the next class came out; for with this class, as we saw, the students ceased to be Government cadets. They and the classes following them, instead of being educated at Government expense, only borrowed money to be returned in instalments. They owed to the Administration of the Hokkaido not a moral but only a financial obligation. They needed not to stay in the Hokkaido: they needed not to serve in its government. The whole world was open before them. They could go wherever they desired. The wide range of studies they pursued, if it lacked profundity, gave them a broad basis for action. It furnished them with clear enough notions of the world, science and letters, wherewith they could adapt themselves to all conditions and requirements. Especially useful to them was the knowledge of English, which enabled them to gain access to an inexhaustible store of knowledge. In all departments of activity and in all parts of the Empire, are their names to be met with. While those who are in Kens are chiefly identified with educational work, such as are in Tokyo betake themselves to official careers, journalism and education. Not a few have made their names in the domain of authorship. A long list of works might be cited covering the field of Agriculture, Physics, Chemistry, Botany, Engineering, History, Zoology, Fishery, Geography, Travels, Economics and Literature.

If a single town and a single province of knowledge is to be pointed out, where the graduates are found in largest number, it is naturally and fitly the town of Sapporo and the province of Industrial Arts.

Here in the center of the Island are laboring between thirty and forty young men, i. e. fully one-third of all the alumni (excluding the graduates of the Military and Practical Departments, who are with scarce an exception resident in the Island) in different branches of the Administration,—education, colonization, agriculture, forestry, fishery, engineering and geological survey. Though their individual names are hidden in a mass of paper by the wonderful working of red-tape machinery, yet any careful and impartial observer will never fail to recognize, that some of the most substantial work of the Hokkaido Government was primarily the fruit of their exertions. The town of Sapporo reaps no small benefit from their presence; for they take a leading part in the chief local concerns of an intellectual nature. As the College was instrumental in first introducing into Sapporo some elements of material civilization,—the bakery, the shoe-shop, the tailoring establishment, etc.,—so are its sons now become pioneers in the sphere of less material nature. The Society for the Advancement of Agriculture, the Fishery Association, the Natural Science Society, a body called the Friends of Learning, the Pomological Society, the Economic Club, the Young Men's Christian Association, the Temperance Society, the Silk Culture Association, and many other minor organizations all count among their most active members and promoters the graduates of the College. Notwithstanding all this it must still be admitted that her ripest fruits have not yet been borne. President Gilman, speaking of the results achieved by a university, named a generation as "the briefest

period for a fair review." With little modification can the same be affirmed of a lesser educational institution than a university.

The college has often been charged with having come short of its mark, in that it has turned out but few practical farmers. This point has been more than once touched upon and explained in the course of our narrative. It is hoped that, the fact that the training of practical agriculturists was neither the exclusive nor the main object of the college, has been made sufficiently clear. Even if some of the graduates were by nature or association inclined to pursue rural callings, few of them were provided with sufficient capital to enter into it at once. Unlike law or literature, a tongue and a pen are not enough to start a young man in the business of farming. Neither could they utilize what agricultural knowledge they acquired, by becoming directors on large estates, simply because the native system of small farming left no room for such functionaries. The alternative for those who would resort to agriculture, was either to choose a post in civil service or to "dig and delve" with hoe and spade. For the latter they either possessed too much self-respect or too little self-sacrifice.

Irrespective of the College in Sapporo, it is not to be wondered at, that higher agricultural schools in general, whether in Europe or America, have not always turned out agriculturists. About the only question which is settled in regard to Agricultural Science, is that such a study is essential: the rest belongs to the domain of inquiry. What should an agricultural course include and what should it ex-

clude? How far should practice enter in forming an ideal course? Should or can an agricultural college be separate from a university? Which social class should an agricultural institute chiefly keep in view to educate? Should the study of agricultural science be content with demonstrating scientific truth, regardless of their practical application or applicability, or should it aim over and above all to discover and improve practical methods?

All those and many other points have been mooted and hotly discussed pro and con without being solved. Yet it is obvious that a rational system of agricultural instruction can ensue only after these queries are satisfactorily answered. That delicate adjustment between Science and Practice is by far the hardest point to settle: for between the profit-seeking Practice and the truth-seeking Science there lies a wide gulf in interests. While this looks for its reward in the long future, that must reap its immediate fruit. While the one is fearless of its consequence, the other is only anxious of its result. The Practice and the Science of Agriculture do not always harmonize in their demands: and as long as an educational scheme is bent upon combining the two, without defining their respective proportions, there can be no uniform and universal system adaptable to all cases. It is likely that for years to come an agricultural course will not acquire that uniformity, which is observable in other departments of scientific knowlege. It is more probable that each agricultural institution will develope a character peculiar to itself, imparting to it an individuality of its own. One may excel in pomology, another in

agricultural engineering, a third in extensive farming, a fourth in horticulture, and so on, according to the needs of the time and the place, and the spirit of the faculty. Consciously or unconsciously, it feels its way and ascertains what the world around it expects of it. An organization, no less than an organism, can not last long without adapting itself to its environment. Such a transition takes place but slowly and cautiously. Let no undue pressure of the outside world be exterted upon it to hasten the process. Politics must never meddle with an educational institution: for the kingdom of Science must never tolerate the rule of politics or pander to the fickle wants of public opinion.

APPENDIX.

Course of Study and Instruction.

(The numerals denote number of hours for each week.)

Agricultural Department.

Freshman Year.

1876.	*At Present.*
First Term.—Algebra, including Logarithms, 6; Chemical Physics and Inorganic Chemistry 6; English, 6; Japanese, 4; Military Drill, 2; Manual Labor, 6.	*First Term.*—Introduction to Agriculture and Soils, 3; Agricultural Practice, 3; Inorganic Chemistry and Analysis, 7; Vegetable Histology with Laboratory Work, 5; Geology, 4; Surveying 6; English, 2; German, 2; Military Drill, 2.
Second Term.—Geometry and Conic Sections, 6; Organic and Practical Chemistry, 8; Agriculture, 4; English, 2; Elocution, 2; Freehand and Geometrical Drawing, 3; Military Drill, 2; Manual Labor, 6.	*Second Term.*—Soil Improvement and Agricultural Machines and Implements, 4; Agricultural Practice, 6; Organic Chemistry and Analysis, 5; Cryptogamic Botany with Laboratory Work, 7; Physics, 5; English, 2; German, 2; Military Drill, 2.

Sophomore Year.

First Term.—Agricultural and Analytical Chemistry, 8; Botany, 3; Human Anatomy and Physiology, 3; English, 2;	*First Term.*—Drainage and Irrigation, 4; Agricultural Practice, 6; Agricultural Chemistry, 5; Vegetable Physiology,

Elocution, 2; Agriculture, 4; Military Drill, 2; Manual Labor, 6.

Second Term.—Trigonometry and Surveying, 6; Quantitative Analytical Chemistry, 8; Botany, 4; Agriculture, 2; English and Japanese Translations, 2; Mathematical Drawing and Plotting, 3; Military Drill, 2; Manual Labor, 3.

4; Zoology with Laboratory Work, 5; Physics, 5; German, 2; Military Drill, 2.

Second Term.—Manures and Crop Rotation, 4; Agricultural Practice, 6; Agricultural Chemistry, 2; Vegetable Pathology, 5; Zoology with Laboratory Work, 6; Political Economy, 3; German, 2; Military Drill, 2.

Junior Year.

First Term.—Mechanics, 6; Zoology, 3; Botany, 3; Fruit Culture, 3; English, 4; Japanese, 2; Military Drill, 2; Manual Labor as required.

First Term.—Farm Management and General Crops, 4; Japanese Agriculture, 2; Agricultural Practice, 6; Zoology with Laboratory Work, 5; Forestry, 3; Agricultural Economy, 4; German, 2; Military Drill, 2.

Second Term.—Astronomy and Topography, 6; Stock and Dairy Farming, 3; History of English Literature, 6; Landscape Gardening, 3; English and Japanese Compositions and Translations, 3; Military Drill, 2; Mechanical and Topographical Drawing, 3.

Second Term.—Special Crops and Fruit Culture, 5; Japanese Agriculture, 2; Agricultural Practice, 6; Animal Feeding, 3; Entomology and Sericulture, 6; Fishery, 3; History of Agriculture, 1; German, 2; Military Drill, 2.

Senior Year.

First Term.—Physics, 6; Veterinary Science and Practice, 6; Geology, 4; Bookkeeping, 4; Extempore Debate, 2; Microscopy, 3; Military Drill, 2.

First Term.—Special Crops and Stock Farming, 4; Agricultural Practice, 6; Agricultural Technology, 2; Voterinary Medicine, 4; Agrarpolitik, 4; Military Drill, 2; Graduation Thesis.

Second Term.—Roads, Railroads and Hydraulic Engineering, 6; Mental Science, 4; Political Economy, 4; Original Declamations, 1; Military Drill, 2.

Second Term.—Stock Farming, 3; Agricultural Practice (as required); Veterinary Medicine, 3; History of Colonization, 2; Military Drill, 2; Graduation Thesis.

ENGINEERING DEPARTMENT.

First Year.

First Term.—Analytical Geometry, 5; Descriptive Geometry, 8; Inorganic Chemistry and Analysis, 7; Geology, 4; English 2; German, 2; Military Drill, 2.

Second Term.—Differential Calculus, 5; Surveying, 3; Surveying Field-work and Draughting, 6; Physics, 5; English, 2; German, 2; Military Drill, 2.

Second Year.

First Term.—Integral Calculus, 5; Surveying, 3; Surveying Field-work and Draughting, 6; Physics, 5; Astronomy, 3; German, 2; Military Drill, 2;

Second Term.—Applied Mechanics, 5; Graphical Statics, 7; Materials of Construction, 3; Physics, 2; Road Constructin, 5; Political Economy, 3; German, 2; Military Drill, 2.

Third Year.

First Term.—Applied Mechanics, 3; Geodesy, 3; Railway Construction, 11; Transportation, 2; German, 2; Military Drill, 2.

Second Term.—Bridge Construction, 9; Masonry and Foundation, 9; Architecture and Building Construction, 6; Machine Element, 3; German, 3; Military Drill, 2.

Fourth Year.

First Term.—Bridge Construction, 8; Hydraulic Engineering, 10; Sanitary Engineering, 3; Military Drill, 2.

Second Term.—Sanitary Engineering, 3; Electrical Engineering, 2; Engineering Designs, 8: Graduation Thesis; Military Drill, 2.

PREPARATORY DEPARTMENT.

First Year.

Ethics, 1; Japanese, 2; Chinese, 3; Japanese and Chinese Composition, 2; English, Reading and Translation, 4; Spelling and Writing, 4; Universal Geography, 2; Japanese History, 1; Chinese History, 1; Arithmetic, 4; Gymnastics, 2.

Second Year.

Ethics, 1; Japanese, 3; Chinese, 3; Japanese Composition and Dictation, 1; English, Reading and Translation, 4; Grammar and Composition, 3; Universal Geography, 2; Universal History, 2; Arithmetic, 2; Algebra, 3; Freehand Drawing, 1; Gymnastics, 2.

Third Year.

Ethics, 1; Japanese, 1; Chinese, 3; Japanese Composition, 1; English, Reading and Translation, 4; Grammar and Composition, 3; Universal History, 2; Algebra, 3; Geometry, 2; Physics, 1; Chemistry, 1; Hygiene, 2; Freehand Drawing, 1; Mechanical Drawing, 1.5; Gymnastics, 2.

Fourth Year.

Ethics, 1; Chinese, 2; Chinese Composition, 1; English, Reading and Translation, 4; Composition and Declamation, 2; Ancient History, 2; Algebra, 2; Geometry, 3; Botany, 3; Physical

Geography, 2; Physiology, 1; Freehand Drawing, 1; Mechanical Drawing, 1.5; Gymnastics, 2.

Fifth Year.

Ethics, 1; Chinese, 2; Chinese Composition, 1; English Literature, 4; Logic, 1; English Composition, 1; Modern History, 2; Trigonometry, 4; Zoology, 3; Mechanics, 2; Chemistry, 3; Freehand Drawing, 1; Mechanical Drawing, 1.5; Gymnastics, 2.

PRACTICAL DEPARTMENT.

First Year.

First Term.—Practical Exercises in the use of Horses and Cattle, Agricultural Implements and Machines, Animal Management, Preparation of Fertilizers, Cultivation of Grain and Vegetables, Harvesting and Storage of Crops, Drainage and Breaking of new Land, Seed-beds Prepapation and Transplantation, Hay-making. *Lectures* on Agricultural Machines, Vegetable Physiology and Outlines of Chemistry.

Second Term.—Practical Exercises in the use of Horse and Cattle, Construction of Agricultural Machines, Animal Management, Preparation of Fertilizers, Cultivation of Crops, Butter-making, Making of Maple-Sugar, Seed-bed and Transplantation. *Lectures* on Fertilizers, Soils, Soil Improvement, Vegetable Pathology, Fruit Culture, General and Special Crops.

Second Year.

First Term.—*Practical Exercises* in the use of Animals, Agricultural Machines, Animal Feeding, Fertilizer Preparation, Crop Raising, Storage and Preservation of Crops, Butter-making, Milking, Fruit Preservation, Brewing, Charcoal Burning, Manufacture of Vinegar and *Miso*, Wool Shearing and Cleaning. *Lectures* on Farm Management, Animal Physiology, Surveying with Practice, Practical Entomology.

Second Term.—Agricultural Machine Construction, Repair of Harness, &c., Animal Feeding, Fertilizer Preparation, Crop Raising, Poultry keeping, Butter-making, Milking and Salting of Meat, Hemp and Flax Manipulation, Starch Manufacture, Bread-baking, Indigo Preparation, Manual Training. *Lectures* on Stock Farming, Veterinary Practice, Surveying, Horseshoeing with Practice, Rural Economy.