

the three first are already ankylosed, the two first completely, and the second and third only partially, as the neural arches and transverse processes are not yet united in one bone. In the allied Hyperoodon all the cervical vertebræ are coalesced, and it is therefore possible that when Berardius is in an adult state, the same will take place. The *Ziphius* has six cervical vertebræ separate, and it will therefore be necessary to examine very carefully into the character of the uncoalesced vertebræ of our skeleton before giving a decided opinion upon the subject. It possesses ten dorsal vertebræ, in common with *Ziphius Sowerbiensis*; the hyperoodont whales have nine, and the dolphins thirteen to fifteen. I have not yet been able to count and examine the lumbar and caudal vertebræ, as the animal was in such a state of putrefaction, that after cleaning the bones as well as possible, and leaving often a great portion of the vertebral column together, we put them at once to macerate. We obtained only one of the small pelvic bones, the other having probably been washed away by the surf; it might, however, owing to its diminutive size and sticking loosely in the flesh, easily have been overlooked. As soon as the bones are clean, so that I can examine them, I shall offer a few more observations upon the osteology of this remarkable animal, for the complete skeleton of which, the Canterbury Museum is indebted to the members of the Philosophical Institute, without whose pecuniary assistance I should have been unable to secure it for the Provincial collections.

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ART XLVI.—*On UNIVERSITY EDUCATION, as adapted to the circumstances and prospects of the Colony of New Zealand.* By CHARLES FRASER, M.A., F.G.S.

[Read before the Philosophical Institute of Canterbury, June 2, 1869.]

MUCH useless discussion may be avoided, and our progress greatly facilitated, if from the very outset, we come to a distinct understanding upon the following three points:—1. What is a University? 2. What should be its distinctive objects in the colony? 3. How far may we expect to carry out any good system within the next few years?

(1.) In regard to the first question,—What is a University? the two oldest Universities in Europe furnish us with somewhat opposite definitions. The University of Bologna was a Corporation of Students; the University of Paris was a Corporation of Teachers. It would probably be nearer our mark to combine the two, and to contemplate the establishment of a Corporation of Teachers, Graduates, and Students, under the presidency of certain officers appointed by the Government. Of course the privileges and powers of the three classes named would be different; but it seems to me that all ought to have their share of influence in the conduct of business.

(2.) The distinctive objects of a Colonial University cannot be better described than in the words of the charter, granted by Her Majesty to the University of London:—“the advancement of religion and morality, and the promotion of useful knowledge, by holding forth to all classes of Her Majesty’s subjects, without any distinction whatsoever, an encouragement for pursuing a regular and liberal course of education, by offering to persons who desire to prosecute or complete their studies such facilities, and conferring on them such distinctions and rewards as may incline them to persevere in their laudable pursuits; and for the purpose of ascertaining by means of examination, the persons who have acquired proficiency in literature, science, and art, by the pursuit of such course of education, and of rewarding them by academical degrees, as evidence of their respective attainments and marks of honor proportioned thereunto.” In other words, University Education in the colony

ought to contemplate not the instruction of the members of a particular class of society in the higher branches ; but the providing of the means of the best and highest possible education for as many as possible of all classes of society. This was the original object of the older Universities of Europe, and we cannot do better than return to it.

(3.) The third question concerns the immediately practical nature of any proposed scheme. Now, it will not be expected that the colony should send forth, at once, a completely equipped professoriate, prepared, Minerva-like, for all requisite undertakings. But it is possible to inaugurate a good system, to establish a certain portion of it, and to make provision for the whole. Our circumstances are peculiarly favourable to such a gradual method of procedure. The youth of the colony is not prepared to avail itself of a full course, but it may be greatly benefitted by provision being made for establishing certain branches of instruction without delay. And this is further peculiarly the time when reserves can be made from the public lands of the various Provinces as permanent endowments. These two points seem of themselves a sufficient vindication of any attempt, such as the present, to draw public attention to the subject.

We will first of all address ourselves to a brief sketch of the University system.

Many of the difficulties which have often beset public questions in New Zealand, might be avoided in this case, by distributing the various colleges constituting the University, instead of congregating them all in one place. Let us imagine for a moment the effect which would be produced, if the several colleges of Oxford were distributed among so many counties of England, say in Yorkshire, Lancashire, Lincolnshire, Devonshire, Hampshire ; and if their principal men were assembled at some central point such as Oxford, or occasionally moved from place to place, for conducting examinations, granting degrees, and for other University purposes. Such is the scheme which seems best fitted for this colony. Let each province be left to establish and endow its own college, appoint its own professors, and fix its own course of instruction, subject to certain general instructions and regulations as prescribed by the General (Colonial) Government. Let there be a general council of the University, elected for the most part by the graduates of the colleges, but with one or two members elected by the undergraduates, or students, of each college, and with a permanent president and vice-president. To this council would belong the power of initiating such changes as from time to time might require to be effected in the laws and government of the University, and also of deciding upon such questions of dispute as might arise from time to time in any of the colleges, between the professors, or between professors, graduates, and students.

Let there further be a senate, composed of a chancellor, vice-chancellor, a certain proportion of the professors from each college, and a certain number appointed by the votes of the council. To this body let there be entrusted the necessary powers for making examinations, granting degrees, and similar purposes.

A quinquennial visitation of the colleges and the senate, conducted by a board specially appointed for that purpose, and named by the council, would tend greatly to preserve and promote healthy and vigorous life throughout the whole establishment.

Into the question of the appointment of professors it is unnecessary to enter ; especially, as there is no reason why the same exact method should be observed in every college. But as a general rule it might be well ultimately to place a considerable, if not the chief, part of the power in the hands of the graduates.

It remains for us to consider the subjects and the method of instruction.

I. In discussing the subjects to be taught, the first and most important topic that meets us is the place to be accorded to languages, and especially to the languages of ancient Greece and Rome. No one who has a desire to promote the highest culture in himself or others, will seek to exclude these languages from a full system of education. Besides the arguments which are usually adduced in their favour, there are two which appear to be of pre-eminent authority. One of these is, that the civilization of these two countries is the only one which we can definitely trace from its early dawn, throughout a splendid though varied career, right onward to its final disappearance amid the clouds of luxury, depravity, and barbarian invasion. The history of no other nations presents us with an account so full in all its details, so complete as a whole, of the growth and decay of the principles of art, philosophy, law, and political action, diffused throughout whole generations of a social system, and expiring with it: and the world, it is to be hoped, will never see the like again. The other main argument in favour of the classic tongues is found in the important use which is made of them, as forming together a sort of common language for scientific men, and affording the basis of one common scientific nomenclature. From the countless names of the ever-increasing lists of botany, upwards, to the words which describe the newest and most important discoveries, such as the electric telegraph, palæontology, seismology and the wonders of the solar spectrum, we are indebted to Greek and Latin for terms which are universally intelligible among scientific men of different countries, and which interfere with the genius and tendencies of no living language.

The admission of the classic languages, then, into every system of education, which aims at either completeness or high culture, may be regarded as placed beyond all question. But the grounds on which they are admitted, and the kind of study of which they will form the objects, may be said to have undergone a complete revolution. Languages may be acquired and mastered, either on account of their usefulness as instruments of thought, and of the literary and philosophic treasures which are found in them, or as objects of interest in themselves, means of disciplining the mind, and permanent, crystallized records (I know not how otherwise I can express the idea) of a certain cast of national life and thought. For the sake of this second class of objects, it may be most desirable and necessary that the minutæ of a language be completely mastered, and the power of composing both prose and verse in it be fully acquired. But Greek and Latin have no longer the exclusive claims to be so studied, which they once possessed.

The science of language in general, and of universal grammar, as illustrated in the works of Bopp and Max Müller, at once supplants them, and includes them as a part of a more comprehensive scheme; while the Sanscrit of India, and the Anglo-Saxon from which our own language is derived, have as certain, though not as great, a claim upon our attention.

What knowledge may be required of the minutæ of idiomatic Greek and Latin, ought therefore to be relegated to the preparatory schools; while the University ought in its several colleges to assume this knowledge as acquired, and instead of professorships for instruction in Latin phrases, Greek dialects, and metrical niceties, should establish professorships of the combined study of the history and languages of ancient Greece and Rome. The works of Grote, Stuart Mill, and Rawlinson, indicate sufficiently what the course of study might be in this department.

This short explanation may perhaps have paved the way for the account of such a course of study as ought to be pursued.

But here two principles require to be steadily kept in view, and used to

guide us in regard to the order in which the different branches of study ought to be taken up :—

1. Those studies which are most difficult, either from their nature or by reason of the complexity of their objects, ought to be reserved to the last.

2. The natural progress of development observed by the mental faculties themselves, ought to be followed as far as possible.

As a general rule, then, languages would come first in order, then sciences of observation (or natural history in its various branches); next the material sciences of induction and deduction, or those sciences which examine the changes which take place in material bodies, and the forces by which those are produced, such as the departments of natural philosophy and chemistry. At the same time, mathematics, or the science of abstract number and quantity, ought to be pursued.

Thereafter would come mental and moral science, and lastly social science in its two great departments of history and political economy.

According to these views the staff of professors in each college, which attempted to give a complete scheme of education, would take up the following subjects in their order :—

I. The history and languages of Greece and Rome.

II. Languages and universal grammar.

Under these two heads it is almost needless to say that a very great variety would be afforded both as to subjects and mode of treatment. Along with a general and rapid view of the whole field, special authors would be selected in the first case, and special languages or families of languages in the second.

III. Natural history, in its various branches of mineralogy, geology, hydrology, meteorology, botany, and zoology.

IV. Mathematics.

V. Natural philosophy and chemistry, including under the first term somatology, or the doctrine of the general properties of bodies; mechanical philosophy, or the dynamics and statics of solid, liquid, and gaseous bodies; electricity and magnetism, optics, astronomy.

VI. Mental and moral philosophy, or psychology and ethics.

VII. English language and literature.

VIII. Logic and rhetoric.

IX. Sociology, in the historic and dogmatic form, that is, as modern history and political economy, and jurisprudence. (Hallam, Mill, Austin).

It will be observed that according to this arrangement we have the various branches of study set in distinct groups, and according to a definite, and, it would seem, a natural plan.

We take first of all languages, the great instruments of thought. Then we turn to physical science and mathematics, in their several divisions, when the mind is exercised and assisted by the sensible forms or representations of things.

Thereafter the mind is directed to a much higher, but much more difficult study, the study of its own faculties and laws.

Following these come what may be termed the practical application and realization of the principles hitherto acquired, in a consideration of the English language and literature, the methods of reasoning and persuasion, and the historical and formal discussion of the great problems of life.

The question which naturally suggests itself on review of these departments of study is, "How far, and to what extent, may we contemplate the establishment of such a number of professorships, as might, even in a few years, afford to the youth of this province the advantages of, at least, a portion of this course?" It is very evident that, in time, the number of these

professorships would require to be greatly increased, but meanwhile very considerable benefit would result from the establishment of even a few of them.

At present the study of languages is so far provided for, that we might rather look to the physical sciences, as claiming first attention; and it so happens that this accords well with the necessities and the demands of colonial life.

Natural history is the first department which ought to be provided for, and then mathematics, natural philosophy, and chemistry. English language and literature might be taught in alternate years with logic and rhetoric, by the same professor. Modern history and political economy would form a fourth department. And to these would be added, from time to time, the remaining branches, as necessity for them arose, and the means were provided.

The suggestion which was thrown out during the last session of the General Assembly, that lectureships might, in the meanwhile, be established, at a moderate-cost and with very great advantage, seems still to be worthy of consideration, and within our immediate reach. By these means our own Museum would form the nucleus of an important institution, which might gradually develop into a complete college, and constitute no mean branch of a Colonial University.

I have purposely avoided any reference, at present, to the question of professional education, in law, medicine, and civil engineering: but it is apparent that the course now sketched out would be of very material, direct benefit to the students of these departments.

The method of instruction is a wide and quite distinct subject, requiring to be considered with regard to the peculiarities of each branch of knowledge. This may form the subject of a second paper, if leisure and the other engagements of the Institute permit.

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ART. XLVII.—*On the GENERAL PRINCIPLES OF AN EDUCATION SCHEME for New Zealand.* By W. S. HAMILTON, Mathematical Master, Wellington College and Grammar School.

[*Author's Abstract of Paper read before the Wellington Philosophical Society, November 13, 1869.*]

THIS paper first reviews the position of the question by examining existing circumstances, and enumerates the difficulties surrounding the subject as follows: "The mixed nature of society,—people of different countries and creeds; of different ideas of the object and character of education, and of different degrees of education and refinement;—the population being scattered;—the difficulty of obtaining trained teachers;—the high price of labour tempting parents to withdraw their children from school at an early age, and the teachers to abandon their professions for more lucrative pursuits;—the absence of a standard for teachers to work up to;—the little interest taken in the teacher's labours, by a heterogeneous and restless population;—the absence of inducements to study on the part of the pupils, and the difficulty of procuring funds in the absence of foundations and endowments."

"These complications deter statesmen from considering the subject till necessity compels; when the educational system of some larger or differently circumstanced community is hastily adopted, without the necessary material on the ground for the construction of the fabric. Disappointment follows, and the result often is, the entire neglect of education for a time." The provinces of Auckland, Wellington, and Southland are cited as examples of this neglect; while on the other hand Nelson is referred to as an example of attempting to impart a higher education than is possible or profitable for a young colony.