SCIENCE

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SHOULD LATIN AND GREEK BE REQUIRED FOR THE DEGREE OF BACHELOR OF ARTS?

THE removal of Latin from the curriculum required for A. B. by another prominent university has re-opened discussion respecting the relative worth of classical and other studies. The discussion is conducted much in the same manner as of old and disputants on both sides frequently show irritation when the opposing opinion is expressed. They seem to regard the matter as so thoroughly settled that all doubts can be disposed of by a wave of the hand. But the matters involved deserve very different treatment from this. There must be something worth considering on both sides, otherwise intelligent men would not be ranged in opposing camps. The writer will endeaver to present one side of the case.

One point should be noted at the outset. It must be evident to those who have followed the discussion during late years that the contestants are not equally competent to render judgment. Most of those who resist encroachment upon territory, held so long by the older system, and who deny that inductive sciences can be utilized as culture studies are unfamiliar with science and cannot distinguish between pure and applied science. Their reading has been determined by their college training, or their studies have been confined within

somewhat narrow limits by professional surroundings. Their knowledge of chemistry and physics is bounded by the curriculum of thirty or more years ago in the larger colleges or by that of some of the younger institutions with limited resources; while their knowledge of biology, geology and modern psychology has been derived from magazine articles, popular summaries or from controversial works of not wholly friendly character.

American workers in pure science, who have passed middle age were trained, with few exceptions, in the studies of the old curriculum, so that they understand thoroughly its nature and its advantages. But the exigencies of their work have compelled them to recognize the deficiencies also. The great majority of those laboring in pure science have a working knowledge of French, German, and Italian and many add Spanish and Russian; some require in addition a good knowledge of the oriental languages as well as of numerous dialects —in every case a knowledge much more exact than the knowledge of Greek and Latin possessed by the ordinary college graduate; and all of this merely as preparation for their work. Such study necessarily brings men into touch with a great range of knowledge, so that, especially among naturalists, many are well read in various branches of philosophy and almost all have a broad acquaintance with literature. These are the men who assert deliberately that the older system of education is a survival of conditions which men have outgrown and that it is no longer fitted to our needs.

In one sense, education, as training, is an end in itself, being a course in mental gymnastics; but in the true sense it is far more, embracing not merely mental training but also the imparting of knowledge.

In another place, the writer likened the college course to emery used in polishing metal and held that, as one has no concern for the emery after the metal has been polished, so, if the youth be developed, it matters little whether or not his college studies disappear from memory. But this is a narrow view, regarding mere training as the single end, not considering that this strengthening, developing process consumes the years when the power of acquiring and that of retention are most efficient. Those years ought not to be expended in training to the exclusion of learning. Youth in America is shorter now than formerly; manhood's responsibilities come earlier and are heavier; one cannot ignore the utilitarian side of education—utilitarian, not in the sense of dollars and cents but in that of preparing the man for usefulness. There should be more than mere robustness to show for the labor of the early years, some capital should be accumulated with which to utilize the robustness.

Study of classical tongues retained its very prominent place in college curricula long after necessity for it disappeared. Until little more than one hundred years ago, classical languages were studied for use—the study was as purely utilitarian in purpose as is that of the Calculus to-day. Latin, as the language of the mediæval church, was the language of educated men until the latter part of the eighteenth century; university lectures were delivered in Latin; scientific, theological and philosophical works were written in it. At the revival of learning, the sources of knowledge were classical and early Christian writers: to reach them, acquaintance with Greek and Latin was essential; those tongues were learned by students at that time as anatomy is learned by the medical student of our time and for the same reason. There were but two learned professions, Law and Theology, with Medicine as a coming third. Education was for the few, to enable them to enter a profession, not to develop them,

not to render them useful. Educated men could not touch commerce—that was degradation. But education now is for all, for the poor as for the rich, for the merchant as for the professional man; we recognize that the professional man ranks no higher intellectually than does the financier, whether the latter deal in money or in goods. This absolute reversal of conditions cannot be ignored in the discussion.

When men threw off the bonds of the mediæval church, the study of things replaced that of words; men discovered themselves and the great world about them. As knowledge increased, respect for the dicta of ancient writers decreased; Latin and Greek fell into disuse and at length necessity for acquaintance with them disappeared. But the curricula had become hoary with age; change meant revolution; the universities were controlled by men who knew no other training and the prominent instructors in almost all branches belonged to the clerical profession. Those investigating material things were spoken of disdainfully; even those studying the physical portion of man received little respect from those who studied his mental and spiritual portion—their work was referred to patronizingly as requiring less intellectual power than that of their critics —a reflection not wholly unknown in our time, for there are still those who appear to think that familiarity with material things unfits a man for taking the higher flights of philosophical reasoning. There may be something in this reflection, for a knowledge of facts cannot fail to fetter the wings of a philosopher of the old type.

When classical study ceased to be necessary from the utilitarian standpoint, those entrusted with educational work discovered that it was still necessary from an educational standpoint. Verily necessity is the mother of invention. Necessity increased with years and for the last half century men have been seeking excuses for retention of compulsory classical study. They have succeeded in convincing those who know little about either classics or science that without such a smattering of the classics as the college man usually receives, no one can be regarded as educated.

The change in purpose brought about a change in the teaching, so that classical instruction, as commonly conducted in secondary schools, leads a youth along an investigation of grammatical principles. The great majority of young men, who enter college after four to six years of preparation, find themselves so burdened by lexicon work that too many of them seek relief in the convenient 'Bohn.' Acquisition of the vocabulary seems to be less important than mastery of nice points in syntax. An eminent instructor in Latin told the writer that in marking students he laid little stress on translation, as a 'Bohn' is always available; his grading was based on proficiency in prose and quantity which had to be studied. That a large proportion of Bachelors, after ten years of study, cannot read their diplomas without resort to a lexicon causes no surprise to them or to their instructors. They had not been attempting to acquire either Latin or Greek, but they had been utilizing classical words and idioms in studying the principles of grammar. True it is, that this statement is not of universal application; there are exceptions among both instructors and students and, owing to the demand that there be something tangible to show for the labor of years, the number is increasing; but the fact remains that the conditions as described are those which prevail; and they have much to do with the notion that the study of classical languages is much more difficult than that of other languages.

But one asks, suppose that the young man has acquired an accurate knowledge of, let us say, Latin, that he can read, write

and speak it, has he gained nothing? He has gained much, he has learned accuracy in expression; a certain discrimination in the use of terms; he has cultivated his memory; he has become acquainted with the tongue in which men of Rome expressed their thoughts; in which many theologians of the early centuries expressed their conceptions of what Christianity ought to be; in which theologians of later centuries expressed their conceptions and misconceptions of what the Fathers wrote; the language of educated men until a little more than one hundred years ago. Thus he has acquired, first, a sharpening of certain faculties and, secondly, the means which give direct access to a great literature representing in time more than two milleniums preceding our century.

This much he has acquired and it certainly is a great deal. Those who defend the necessity for classical training assert that he has acquired much more if he be an English-speaking student. It is said that one has a better understanding of his own tongue if he have a good knowledge of the classics, since so much of our language is derived from the Greek and Latin. Shakespeare, we are told, enriched our vocabulary by the addition of not less than three thousand words.

Much is made of this, but one may doubt the importance of the reasoning. Words are available when they become identified with things either material or abstract, so that one's ability to use them with precision depends upon the exactness of the identification. The question of their origin does not enter into the matter. Indeed, one too fully imbued with the signification of parent-words may employ derived words in senses at variance with accepted significations. If there be any force in the argument, it would apply rather to a course in Anglo-Saxon or in the language of the Authorized Version, if the object be to cultivate a direct style. That Shakespeare's works enriched the English vocabulary admits of no doubt; but if Shakespeare wrote his plays, the argument gains little strength by reference to him, for, according to Ben Jonson, he knew 'little Latin and less Greek.' In any event, however, this is a matter of no importance. The suggestion that our language is in urgent need of further enrichment can hardly commend itself as wise in view of the fact that the lexicons already boast of approximately three hundred thousand words, while the vocabulary of the metropolitan newspaper does not exceed three thousand and that of great writers rarely equals ten thousand.

But conceding all that has been conceded so willingly because true, the query persistently comes: Is the profit in due proportion to the expenditure in time and labor? Might not the mental discipline be acquired equally well by the use of other languages, which would open a wider field of knowledge and render the man more useful to himself and to his fellows?

The modernized courses pay too little attention to instruction in the use of language. The literary courses are better than the older types in that they do not exclude the English language and proper training in that direction is not far away; but the defect is still too conspicuous, especially in the scientific courses. Laboratory work leads to exactness in method; field-work gives precision in observation and comparison; scientific training, in general, strengthens the logical powers and gives precision in thinking; but none of them gives precision in expression. As in theological seminaries, too often, preparation for preaching is neglected on the principle that if a man has anything to say he will find no difficulty in saying it, so the study of language as a means of expressing one's thoughts has been neglected in scientific training. Nevertheless, one cannot fail to

recognize that the writings of scientific men compare, at least, favorably with the writings of those who have had the great advantage of classical training, that is to say, of the average clergymen and lawyer, those who plead so urgently for retention of the system from which they have received such abundant profit. Brilliant rhetoricians cannot be taken as examples of what the training can do—in the intellectual as in the vegetable world, the average of the fruitage, not the choicest selections, must be taken as type of the product. And one must not forget that the soil in which seed is planted has much to do with the crop.

But the remedy for this defect in modern training is very simple, and its application involves no material change in plan.

The advantages derived from education according to the old system do not come from the study of Latin and Greek any more than they would come from the study of French, Hebrew or any other language. The results are due to the method, not in any sense to the particular language employed. One may say, better, that the result is due rather to skill in applying the method, for classical teaching is very different to-day from that of the older day, when pupils were plunged *in medias res* at the outset. The Arnoldian method is not so far removed from the Ollendorfian as a casual observer might imagine. Why then do we hear the constant claim for the advantage of classical teaching?

The reason is found in conditions still existing in our secondary schools. There, the ablest teachers have always been those in classics, though increasing requirements for college entrance have led in many instances to the selection of strong men for mathematics. Until very recently, the study of English has been perfunctory, while, for the most part, French and German have been taught by 'natives' because they alone can give the 'proper pronunciation.' But those excellent men, though efficient teachers for pupils willing to learn, too often fail as disciplinarians and have to pay more attention to quieting disorder than to imparting knowledge. Here must be made the change needed to remedy the defect in our modern system. Men must be employed, who can teach the modern languages as Latin and Greek were taught seventy-five years ago, when the pupil acquired not merely a fairly accurate knowledge of grammatical principles, but also the language itself. Our colleges must demand more thorough preparation in modern languages—in other words, the transformation which college courses have undergone must reach into the secondary schools. Able men occupy modern language chairs in colleges; able teachers must be found to prepare students.

But some may feel that while a modern language course may be as useful mental training as is a classical course, still there may be room for doubt whether or not he has gained equal preparation for his life's work.

If the end to be attained by classical study, beyond mere discipline, is the ability to read the works of those who wrote in classical languages, surely the labor has been that of supererogation, for practically all that is good in the ancient languages, whether theological or legal or literary, has been done into English after a fashion many times better than that of the amateur—and the reading in English will be vastly more profitable than that in the original, for one's contemplation of lofty sentiments or useful matter is not likely to be interrupted by struggles with difficult construction. This argument is treated with such contempt by advocates of elaborate classical study that one is inclined to regard it as unanswerable. It is said, however, that the true meaning of an author cannot be

ascertained from a translation, the work must be read in the original—which is equivalent to saying that, to most of us, works in a foreign language, especially those in a dead language, must remain sealed books. No man can acquire a knowledge of a dead language, so exact as to enable him to think in it, without expending so much labor as to leave time for little else, so that to most of us a conception of what the writers meant must come through translation.

But we may dismiss this last argument, for it is purely academic and has no reference to the actual condition. It is not pretended that the ordinary college graduate knows enough to make the reading of Latin or Greek authors a delight in hours of relaxation from the burdens of everyday life. Long ago, Latin text-books were abandoned in theological seminaries, not so much because the theology was antiquated as because the students were so burdened by translation that neither time nor energy remained for study of the matter.

But granting all that is claimed, the question still recurs, is the game worth the candle? Is access to classical authors in the original or even in translation a matter of such importance to the average man as to justify the expenditure of the most important years of his life? One cannot avoid expressing some doubts respecting this. Unquestionably, the men of classical Greece and Rome were, in some instances, men of towering intellect; those who worship at the classical shrine demand that we point out in modern times the equals of Aristotle, Homer, Thucydides, Plato, Seneca, Vergil, Tacitus, Horace, Quintilian and half a score of others. Where in modern literature, we are asked, can one find such elevating sentiments, such ennobling philosophy, such brilliant rhetoric? One may reply that perspective has much to do with this type of ancestor worship, that a score or even two scores of names gathered from more than a millenium of antiquity could easily be matched by a score of names gathered from the five centuries preceding our own. Even our nineteenth century, whose materialism grieves so many hearts, does not pale in comparison with the golden period of either Greece or Rome. Men do not stand out pre-eminently now as they did centuries ago, for the field of knowledge is so wide and the laborers so numerous that one may gain eminence only with great difficulty in even a very contracted portion. Pre-eminent in his own area, he may be utterly unknown to workers elsewhere. It is probable that the ablest astronomer in America cannot name the most eminent ten chemists in the world and, in like manner, that the ablest chemist cannot name the most eminent ten astronomers. It is equally probable that no eminent philosopher or historian in this country can name the ten Americans who have been pre-eminent in the several branches of science during the last fifty years. If Aristotle were living now, he would be an eminent professor of philosophy in some university, much respected by philosophers elsewhere, but unknown outside of his immediate circle, unless, like Herbert Spencer, he should undertake problems of broad type, in which case, no doubt, he would be as little read and as much misrepresented as Spencer himself.

Of course, one risks much in venturing to question the over-towering grandeur of the ancient writers, for their names have been enshrined so long that doubts respecting their superiority appear as sacrilegious as were Galileo's doubts respecting the Ptolemaic system. But the fact remains, that the commonly accepted verdict in favor of the ancient writers is not that of our day—it was pronounced at the revival of learning amid the shadows of the receding dark ages and it has become a tradition

in seats of learning to be guarded carefully as a pillar of the intellectual universe.

But the student, who has a thorough knowledge of French and German as well as of his own language, still has access through translations to the thoughts of antiquity, while he has vastly more. He has access to the best thoughts of modern times, to the works of authors in all branches of knowledge during this, the age not only of greatest intellectual activity but also of the most accurate investigation. If he be a professional man, he can keep himself abreast with advance; if he have turned aside to commerce, he finds himself equipped for the broader fields; in any case without early training in those languages, he is crippled and is compelled to learn them amid the pressure of other duties. Those languages he must know—without them, he cannot gain admission to graduate schools of our stronger universities. They are as essential as was Latin a century ago and for the same reason—they are, so to speak the tools of trade. In philosophy, law, theology and the various branches of science, a man is at more than serious disadvantage without them.

In all this, there is no denial that a knowledge of Greek and Latin is useful; but that is wholly aside from the issue, which is, whether the gains from the study of classical languages are such as to justify the demand that it retain the very prominent place in the curriculum. The utility of some acquaintance with Latin and Greek is beyond dispute; naturalists employ terms derived from those languages; astronomers and chemists make heavy drafts on mythology, while relics of old practice in law and medicine remain embalmed in Latin terms and phrases. But the knowledge of Greek and Latin necessary to the physician, clergyman or lawyer is not great in quantity; if it were, most of the college graduates who have taken up those professions would feel themselves sadly handicapped. Indeed, a 'smattering' is all that very many energetic writers demand.

Elementary courses in Hebrew, Arabic, Assyrian, Italian and Spanish are given in all of our larger institutions and, in many, the opportunity is still afforded for the beginner in French and German. Similar courses, as options, ought to be offered in Latin and Greek, planned to give a good knowledge of the vocabulary and to acquaint the student with that something, which we are accustomed to call the 'genius' of the language. A faithful student, with an object in view, should be able in two years to read, with comparative ease, any ordinary work in either of those languages. Certainly, no one will assert that Latin and Greek are more difficult than German or that the idioms are more perplexing than those of Spanish. Scientific men understand this, for there are doubtless few who have not been compelled to acquire at short notice a working knowledge of an additional language in order to prosecute an investigation already begun.

When our college curricula shall have been properly adjusted, the graduate will have received the polish obtained by study of language and literature, the logical mode of thought obtained by study of mathematics, the knowledge, strength and judicial tendency obtained by study of the inductive sciences; while in addition, he will have the means to utilize his gains in the profession or calling which has been in view during the later years of his college life.

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THE BULLETIN OF THE AMERICAN MUSEUM OF NATURAL HISTORY.

IN 1881 Professor R. P. Whitfield saw that the scientific needs of this Museum, its reputation amongst kindred institutions in the world, and its proper recognition of its natural responsibility to the world of