"What did you study Latin for?" was my illogical but American response.

"Why, I am a bachelor of arts!" was his prompt reply, with the air of one who had given a conclusive answer.

"Perhaps these boys will be bachelors of arts by and by," I added cheerfully.

"Then, what in the world are they in a manual training school for?" he exclaimed, with almost a sneer at my evident lack of acquaintance with the etiquette of educational values.

I tried to explain my theory of an all-round education—and my practise of 'putting the whole boy to school'—but he would not be convinced. He could not see the propriety of mixing utility and tool dexterity with culture. Our visitors are not all Englishmen; yet I venture the estimate that fully one half of the bachelors of arts who look through our study rooms and our work rooms have about the same prejudice as the Englishman had, though they do not so openly express it.

THE NEW EDUCATION.

The evolution of the fully fledged technical school, or the technical department of the university, has taken place during the last half century, and yet its broad stimulating, attractive features have a following which bids fair to double the attendance of college and university students. This does not mean that letters and polite learning are being neglected, but that a new constituency is eager for the new education. This new education, though it recognizes at all points a high order of usefulness, and contains little that is conventional, is only remotely professional. If ever its curriculum becomes narrow, it is quickly condemned by the best representatives of an education which combines utility with culture. No longer can the 'Levites of culture,' as Huxley calls them, claim to monopolize liberal education. The new education can be as liberal as the old, and both can be narrow. Fortunately, they flourish side by side and the future shall choose the excellencies of each. An adequate science of twentieth-century education will evaluate the characteristics of each, and bring the wisdom of the past, not its foolishness, to nourish the wisdom of the future.

In conclusion, let us not fear to lay the foundations of the science of education broad enough to carry and to advance our twentieth-century civilization. Let us not fear to strike out for ourselves when the age presents new demands. Progress is essential to life, as Browning says:

> What comes to perfection perishes.

I see nowhere, in either ancient or modern times a people whose youth have been trained as our Americans should be trained. Neither Greece nor Rome with their pinnacles of culture resting on the barbarous foundation of human slavery, nor the blooded aristocracies of modern times, can teach us how to educate, train and adorn an American citizen. We must not expect all our students to rule, nor yet all to be ruled; to direct, nor yet to be directed; to employ, nor to be employed. They must be capable of all these things. No narrow, selfish aim, no prejudice of caste, no false claim of high culture which scorns service, must mislead the growing, expanding minds. Give them a generous, symmetrical training; open wide the avenues to usefulness, to happiness, to power; and this age of scientific progress and material wealth shall be also an age of high intellectual and social achievement.

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SCIENTIFIC BOOKS.

The Nervous System of Vertebrates. By J. B. JOHNSTON, Professor of Zoology in West Virginia University. Pp. xx + 370; 180 figures. Philadelphia, P. Blakiston's Son and Company. 1906.

The study of comparative neurology has always been regarded as difficult, often as uninteresting and sometimes as unprofitable. However much we may ameliorate the first of these difficulties by improved pedagogic devices, we can not hope to make much progress in this direction until the stigma implied in the second and third is eliminated. The mere descriptive anatomy of the nervous system is truly uninteresting and, like any other uncoordinated mass of intricate detail, relatively unprofitable. Only in so far as the nervous system can be described in terms of its functions has its study any value from any point of view; and it is in respect to just this correlation that the past literature of neurology (both text-books and monographs) has been notably weak.

The technique of modern neurological research is so very difficult and diversified and the mass of intricate anatomical detail which must be carried in mind during the progress of investigation so vast, that the neurologists have not, as a rule, been able to control their anatomical findings physiologically as the work progressed. Though anatomical research normally precedes physiological, yet the gap between them can not properly be left so wide as neurologists have been inclined to leave it. Even in pathology, though a few years ago there was a vigorous movement toward a correlation of anatomical and clinical observation, yet the results were disappointingly sterile, and now the tendency is to lay more emphasis on clinical work alone, leaving anatomical research to be cultivated apart by specialists in that field. This surely is not a creditable situation. And though it would doubtless be unjust to place the responsibility on any one specialty alone, yet clearly the anatomists must carry their full measure. For it should frankly be recognized that, though neurology has contributed much to physiology, psychology and psychiatry, yet the direct positive help given to these sciences is not at the present time commensurate with the vast accumulation of laborious research represented in our literature of neurology. And this is particularly true of comparative neurology, which should logically lead in practical fruitfulness.

Professor Johnston's manual strikes at the root of this evil. It is a text-book of functional neurology. The unit of his descriptions is the functional system of neurones, that is, the aggregate of related neurones which cooperate in the performance of any given type of reflex movement. The analysis of these functional systems is a matter of extreme difficulty, involving the collective use of various refined anatomical and physiological methods, but it is obviously so much easier in the brains of lower vertebrates than in the human brain that the comparative method has been here most fruitful. After four introductory chapters, Johnston devotes himself in the remainder of the book to an exposition of the functional divisions of the vertebrate nervous system and their phylogenetic history. The style is direct and clear and the illustrations numerous, so that the student who is equipped with an elementary knowledge of vertebrate anatomy and embryology should be able to follow the author, even though his method and subject matter are for the most part distinctly different from those of the other text-books in general use.

Chapters five to thirteen include the definitions and tabulation of the functional systems, followed by a detailed description of each and its phylogeny. Chapters fourteen to nineteen follow with a similar exposition of the structure and evolutionary history of the centers of correlation, including the cerebellum, mid-brain, thalamus, fore-brain and neo-pallium. These fifteen chapters taken as a whole constitute the most ambitious attempt which has yet been made to elaborate a phylogeny of the vertebrate nervous system. At no time previous to this could such an endeavor be expected to yield more than a limited measure of success; but by basing his phylogenies upon functional units of internal structure instead of superficial external features the author has succeeded in demonstrating the unity of plan of the vertebrate nervous system with gratifying completeness and in showing that this plan is unexpectedly simple. All of the important known stages in the evolutionary his-

tory of these functional systems are illustrated by clear diagrams. The mastery of these simple diagrams will give the student the principal landmarks for all of his subsequent study of cerebral morphology.

While this work is primarily a text-book of the morphology of the nervous system, its great merit lies in the fact that its facts so far as they go also express the functions of the parts, so that comparative physiology and comparative psychology will both find in it an immediate point of departure for their special researches. It will form the natural preparation for such courses and also for courses in human neurology, for it is not designed to take the place of any of the manuals on the human nervous system. Very little space is devoted to the human brain alone except in the chapter on the neo-pallium, yet every chapter is essential to the comprehension of the corresponding human structures, a claim which can hardly be made for any previous work on comparative neurology.

This book is an outgrowth of the work on nerve components inaugurated by the American school of comparative neurologists and no estimate of the validity of the conclusions arrived at is possible without a study of the series of memoirs on nerve components and functional divisions of the brain upon which it is based. This work is still so incomplete that any attempt to summarize its results is necessarily fraught with the dangers of too hasty generalization. And it would be rash to claim that all of Johnston's suggested homologies will stand the test of time. This much may be said, that they are not out of harmony with the facts as at present known, and where his conclusions can not be regarded as definitely proved they are sure to be stimulating and helpful in pointing the way toward the truth; for the basis of the work is sound and the leading conclusions abundantly supported by the singularly concordant results of the studies of the new school of comparative neurologists.

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The Loose Leaf System of Laboratory Notes. By THEO. H. SCHEFFER, A.M., Kansas State Agricultural College. P. Blakiston's Son and Company.

The laboratory note-book is a subject of more or less interest and importance to every laboratory teacher. In some cases its value may be underestimated, and as a consequence the note-book, as an index of the laboratory work of the student, is an almost negligible quantity. On the other hand, there is the tendency to exaggerate its value and overestimate its importance, with the result that it may become the inflated repository of elaborate compilations from every available source, including elaborately detailed drawings, artistically executed, and involving an immense outlay of time and energy, and finally bound up in morocco covers.

Between these extremes are to be found all sorts of intermediate ideals and practises, somewhere among which the 'Loose Leaf System' under review may be listed. Briefly distinguished, it consists of a series of printed laboratory directions for the study of some twenty-one types of animals, from protozoa to birds, the whole loosely tied up in binders' boards, and so arranged as to allow the inclusion of the students' notes in connection with directions given for each type.

So far as the directions themselves are concerned they furnish about what every laboratory teacher provides, namely, a manual of directions, either printed or typewritten, to facilitate and systematize the students' work. The directions here provided furnish a fairly adequate outline for an elementary course in zoology of perhaps a single semester. The chief criticism, from the writer's point of view, is that the directions follow too closely the *verification* method of the older manuals, rather than the *interrogatory* method; that is, the student is too fully advised as to *what* is to be seen and *how,* instead of suggestively presenting him with a series of problems for solution, or opening before him avenues of discovery.

In general, the subjects are well presented, and with comparatively few errors of statement. One such may be pointed out in connection with the study of the medusa, *Gonionemus,* where it is said that 'like all hydroid