held, and papers bearing on matters of geologic interest will be presented. The membership includes the following: F. W. Simonds, J. A. Udden, F. L. Whitney, C. L. Baker, H. P. Bybee, D. J. Jones, W. F. Henneger and Alexander Deussen.

IT is stated in *Nature* that the committee of users of dyes appointed to confer with the British Board of Trade as to a national dye scheme has come to a unanimous decision in favor of the adoption of a scheme which differs in certain important respects from those of the scheme previously made public. The proposal is to form a company with an initial share capital of £2,000,000, of which £1,000,000 will be issued in the first instance. The government will make to the company a loan for twenty-five years corresponding to the amount of share capital subscribed up to a total of £1,000,000, and a smaller proportion beyond that total. The government advance will bear interest at 4 per cent. per annum, payable only out of net profits, the interest to be cumulative only after the first five years. In addition, and with the desire of promoting research, the government has undertaken for a period of ten years to make a grant to the company for the purposes of experimental and laboratory work up to an amount not exceeding in the aggregate £100,000.

UNIVERSITY AND EDUCATIONAL NEWS

UNDER the will of the late General Charles H. Pine, recently published, Yale College will eventually receive an addition of $150,000 to the $50,000 scholarship fund established by General Pine about three years ago. The will also provides for the creation of a fund of $250,000 to be devoted to manual training of Ansonia boys and girls.

BY the will of General William D. Gill, of Baltimore, the Johns Hopkins University is made residuary legatee after the death of his wife. The bequest is to be used for the establishment of a chair of forestry.

AMONG the gifts recently received by Harvard University is one from Mrs. Samuel Sachs, of $2,500 for the purchase of a work or works of art for the Fogg Art Museum, and one of $3,005 from various donors for the Arnold Arboretum.

THE sum of $25,000 has been contributed by Mr. P. S. du Pont toward the University of Pennsylvania Museum extension building fund, which now amounts to more than $100,000. As soon as the fund amounts to half a million dollars, the building of the next extension will be started.

PROFESSOR JOHN A. MILLER, director of the Sproul Observatory of Swarthmore College, has recently been elected vice-president of the college.

DR. RUDOLF HÖBER has been appointed to the chair of physiology at Kiel vacant by the removal of Professor A. Bethe to Frankfort.

DISCUSSION AND CORRESPONDENCE

ON THE PROPOSED REORGANIZATION OF DEPARTMENTS OF CLINICAL MEDICINE IN THE UNITED STATES

TO THE EDITOR OF SCIENCE: Although Dr. Bevan's letter, published in SCIENCE in answer to Dr. Meltzer's, warns college presidents, laymen and university professors who are heads of laboratories to await patiently the findings of committee, consisting largely of practising clinicians, which is now considering the subject of the reorganization of the teaching of clinical medicine, yet in spite of the implied preemption of the subject it seems possible that even a university professor may be allowed to express his views.

For many years scientific work has been accomplished in this country in laboratories associated with the medical sciences, work which has received world-wide recognition. In other instances, clinicians have associated themselves with laboratory men, and have produced results which are known in the great foreign clinics. One might refer to the work of Coleman, of Joslin and of Howland as examples. This represents the cooperation of the laboratory and the hospital which has yielded and is yielding valuable results. There can be no question of the value of sympathetic and friendly cooperation of this sort.

The third stage, that of independent re-

search by the clinician, is the goal toward which the better schools of the country are striving to approach. It is this which led to the recent conditional gifts of $1,400,000 and $750,000 from the Rockefeller Foundation to the Johns Hopkins and to the Washington University. The spirit of modern medicine is that of scientific inquiry into the cause and cure of disease. This spirit can only be imparted by men who are themselves makers of modern knowledge. It is said that science does not explain all things and it is asked why should science be followed? The answer to this question should be, more science, to explain the unknown facts.

It is frequently set forth that there are two subdivisions of medicine, medicine as an art and medicine as a science. The impression is conveyed that medicine as a research science is not the object of a department of medicine. For this reason, the cooperation of the scientific departments is often asked. Innumerable schemes for "correlation" have therefore been presented to various medical faculties throughout the country. "Correlation" in this interpretation signifies that the scientific departments are to give instruction in the clinical years along the lines of the developments of modern scientific research. The oft-repeated request for correlation in this sense shows that there is something lacking in the clinical instruction which should be there.

The medical students of the United States are thoroughly grounded in the fundamental sciences during the early years of association with their schools. The fundamental sciences are largely unknown to the rank and file of the clinical teachers. This leads the latter to ridicule the knowledge which the students, with much labor and care, have sought to acquire. One of two results follow; either the student joins the instructor in belittling the laboratory teaching, or the student, being better informed than the instructor, feels ill satisfied with his opportunities.

The situation is something like this. There is a true scientific medicine based upon the application of research medicine in the clinic. The modern medical student is entitled to this kind of instruction for the fulfilment of his highest development. Can he get this? The answer is found in the argument offered in England as well as in the United States, that the department of medicine should be devoted to the teaching of medicine as an art. It follows that the direction of research is outside its capacity.

Let this problem be examined a little more closely. Many medical schools have recently purchased costly string galvanometers for use in affiliated hospitals. This apparatus is of service in certain diagnoses. As an instrument of research it might perhaps yield a brilliant discovery if used by a man who had been constantly engaged in the study of the phenomena of the circulation during a period of say five years. To the ordinary operator it has no more power of revealing new truths than would a Morse telegraphic outfit.

The truth of the matter is that, as a country, we have produced few men in medical science. This is frankly because the teaching of medicine has not been in accordance with modern science. The staff of the medical department should consist of men, themselves devoted to medical science, capable of carrying it on, brought up in the air of it and blessed by the enthusiasm of it. Such men should be produced under the leadership of the professor of medicine.

The true remedy is that the clinical departments furnish instruction along modern scientific lines. Other remedies are only temporary palliatives. The medical school owes a duty to the public. Personal ambition, even though unconsciously exercised, should not be allowed to frustrate the fulfilment of the duty to the community which the college lives to serve.

The schools are brought face to face with the question whether their policy will be to advance along modern lines or stand still yet a little while.

It is impossible in any faculty to approach this subject without hurting the feelings of true and honorable men, men who deserve well of their country and who are not to blame for the present situation brought about by an

altered trend of educational thought. It is, therefore, extremely difficult to speak of these matters without seeming to be both unkind and unjust. On the other hand, if no word is spoken, blame for cowardice is incurred.

It is the current opinion of the laboratory departments that medicine should be taught as a science by men who are scientific investigators. It is their hope that departments of medicine can be recognized so that this reform can be put into effect. We must think not of ourselves but of the present and the future. Only reorganization along modern lines will bring the best trained students. One needs but have one's touch on the scientific pulse of the country to realize the absolute verity of this statement.

The medical teaching of Friedrich Müller is conceded to be the best in the world. This is his own description of it.

At half-past eight I go to my institute, at ten to the wards. May I explain? My clinic (at 9 A.M.) is in the theater and to this theater the patients are brought, and I show the patients before my students and examine and explain the cases. This takes an hour, and then I go with a part of my students, which changes every day, to the wards and instruct them personally. This takes another hour. Then I go round the wards with my assistants and it is one or half-past one when I have finished. At least three times and in the winter term four times a week I go to my institute in the afternoon and give a general lecture. I lecture upon the diseases of the brain, the diseases of metabolism, diseases of the respiratory system and so on over certain parts of the whole province of medicine. My assistants are in part municipal, paid for by the state. I have one assistant in biological chemistry, another in chemistry, one working on nervous diseases, one doing bacteriological work and making a vast number of tests, Wassermann tests and so on. If I have a case, say, of typhoid fever, I give the proofs to the assistant last named, if I have a nervous case, to the nerve specialist. Any question of metabolism or chemistry I work out with my chemical assistants, and I work with them. I go on with research work and I do this work in connection with my assistants. . . . I have my own laboratories. I have a large laboratory for chemistry. I have a laboratory for physical examinations and especially for pathological anatomy, then one for bacteriology and for the Wassermann test, and so on. We have a large building for laboratory work connected with my clinic and governed by me. . . . Is it really necessary to incur such great expenses? Would it not be possible to conduct the school for the common practitioner in the old well-established manner? No. The general medical practitioner has always and everywhere to deal with the highest good, with the health of his fellow creatures and he must become more and more even in the remotest village the promotor of public health and therefore he must be an educated man. In his responsible vocation he must have some ideal which elevates him above the daily sorrows and disappointments of life. And he will find his refuge in his science. Only a good scientific education will enable him to follow the progress of medicine with critical understanding. Without a good scientific training he would sink into mere routine.

Let these words sink into the understanding.

Objection may be raised that no man in America is fit to conduct a clinic in any way similar to Friedrich Müller's. To say that is to insult the intellectual capacity of the country. It is admitted to-day that we lead the world in biology and in biological chemistry. To state that it is impossible to conduct medical instruction along the lines of what is admitted to be best, is inexcusable sophistry.

In conclusion, it is suggested that departments of medicine be organized under the leadership of individuals who will develop scientific research, and who will be placed upon a salaried basis with prohibition of private practise during a period of five years. The facilities for medical research in the hospital should be freely open to all at present in connection with the schools. The proper development of this scheme would take the whole of a man's time during the first five years. At the end of that time it will be evident whether it is necessary for a master of medical science to have that sharpening of the wits which an outside consulting practise is supposed to produce.

These words have not been written in a spirit of personal antagonism to men of the older order, for the writer has lived long enough to desire to avoid arousing such antagonism. But he feels that they bear the mes-

sage of the modern educational world and that he would be recreant to his sense of truth if he held his peace. GRAHAM LUSK

LETTER FROM PROFESSOR ED. CLAPARÈDE

J'APPRENDS de divers côtés que "Science" a reproduit une nouvelle d'après laquelle j'aurais dû démissionner de mes fonctions à l'Université de Genève. Cette nouvelle est entièrement inexacte. La presse allemande, qui l'a d'abord propagée, m'a confondu avec un de mes cousins, professeur de droit germanique à Genève; celui-ci a en effet été suspendu provisoirement de son enseignement pour avoir, dans son cours, reproché à la population civile belge d'avoir tiré sur ses agresseurs allemands.

Au moment ou ces incidents se sont produits, j'étais mobilisé, à la frontière, comme médecin d'un bataillon de montagne. J'y suis donc entièrement étranger. Mais, puisque mon nom a été prononcé, permettez-moi d'ajouter, pour éviter tout malentendu, que je ne partage aucunement la manière de voir de mon cousin, dont la mère est allemande, et qui a été lui-même élevé en Allemagne, ce qui explique suffisamment son manque d'objectivité en cette affaire. ED. CLAPARÈDE

FACULTÉ DES SCIENCES DE GENÈVE

SCIENTIFIC BOOKS

Text-book of Embryology. Vol. I. Invertebrata. By E. W. MACBRIDE, M.A., D.Sc., LL.D., F.R.S. London, Macmillan & Co. 1914. Pp. 692.

"The design of this text-book of embryology of which this is the first volume, is to associate the structural development of embryos with broad generalizations of what is known of their physiology. Attention will be drawn, for instance, to the correlation between the function of certain organs of a larva and its habit of life, and, in a more general way, between function and habit and the course of development. Reference will be made to some of the more striking results obtained by experimental embryological research. Attention will be drawn to gaps in our knowledge which indicate promising fields for research."

These words by the editor, Professor Walter Heape, introduce a work which promises to be as useful to the embryologist as is the Cambridge Natural History to the zoologist. Two other volumes are to be included in the work, one on the "Lower Vertebrata" by Professor John Graham Kerr and one on the mammals by Mr. Richard Assheton, both announced to be in press.

The volume before us measures 692 pages and is illustrated by 468 well-executed figures. The treatment is necessarily very succinct, as will be apparent when we consider that Balfour's treatment of invertebrata in his "Comparative Embryology" of 1885 was almost equally extended, and that Korschelt and Heider devoted 1,509 pages to the same groups in 1890–93. Professor MacBride's treatment, of course, includes later investigations also. In each phylum at least one type is selected for detailed description of the entire life history, and in the larger phyla each class may be so represented. Comparative data are then discussed; the experimental embryology is then treated, in some groups at least; and in conclusion the phylogeny of the phylum is considered from the point of view of the developmental history. This method admits both of considerable detail in the treatment of the type forms, and also of succinctness in the consideration of the comparative data. It avoids the vicious habit of constructing life histories from pieces of different ontogenies, and at the same time preserves some advantages of the comparative method.

The descriptive part of Professor MacBride's book is well done, and will be most useful. Special note should be made of the adequate descriptive treatment of cell-lineage hitherto lacking in text-book form. A selected list of literature follows each chapter, and the index appears to be very full. The practical embryologist will find methods of study in many places.

In such a book very much depends on the point of view of the author. The material is so great that rigid selection has to be practised: what is to be rejected, what retained and what principles are to be emphasized? There is no doubt about the point of view of Pro-