DR. ARTHUR O. LOVEJOY, of the University of Missouri, has been appointed professor of philosophy at the Johns Hopkins University.

THE J. PIERPONT MORGAN professorship in biology at Trinity College, made vacant by the resignation of Dr. Charles Lincoln Edwards, has been filled by the appointment of Max Withrow Morse, Ph.D. (Columbia), of the College of the City of New York. Dr. Morse will take charge of the work in September. The second professorship in the department, held by Karl Wilhelm Genthe, Ph.D. (Leipzig), who returns to Prussia, will not be filled at present.

IN the Harvard Medical School, Dr. W. R. Brinckerhoff, who for the past four years has been a member of the U. S. Government Leprosy Investigation Commission at Molokai Island, has been appointed assistant professor of pathology, and Dr. S. B. Wolbach, at present director of the pathological laboratory of the Montreal general hospital, has been appointed assistant professor of bacteriology.

DR. H. W. MORSE has been appointed to an assistant professorship of physics, and Dr. L. J. Henderson to an assistant professorship of biological chemistry at Harvard University.

DR. K. T. FISCHER, of the Munich School of Technology, has been called to a chair of physics in the University of La Plata.

DISCUSSION AND CORRESPONDENCE

THE STUDY OF ROCKS WITHOUT THE USE OF THE MICROSCOPE

THE phrase "without the use of the microscope" appears on the title page of two well-known text-books of petrography.[1] In a number of colleges and universities there are petrography or lithology courses given in which rocks are treated entirely from the megascopic standpoint. The writer has no fault to find with the two excellent text-books mentioned, for they may be used in connection with microscopic work; but he does take issue with the method of studying rocks without the microscope.

[1] Kemp, "Handbook of Rocks"; Pirsson, "Rocks and Rock Minerals."

In order to anticipate our critics, let us assume at the outset that the average student has neither the time nor inclination to become an expert petrographer and also that in after life he will not have a polarizing microscope available. In view of these facts why then should the microscope be used in the study of rocks?

In the writer's opinion no one can have an adequate knowledge of rocks until he has studied them in thin sections. What conception of the gradations between rocks, the variations in texture, intergrowths, inclusions and alterations has the student who has never made a microscopic study of rocks? Yet some idea of these things is essential to an understanding of rocks. What does he know about fine-grained rocks such as basalts or the fine groundmass of such rocks as rhyolites? After the student has studied a type collection of rocks, together with the corresponding thin-sections, he is in a position to determine the commonly occurring rocks in hand-specimens because he has worked out thin-sections of similar rocks. In studying the slides he looks for minerals in the hand-specimen that would otherwise escape his notice, and learns to identify them. He has also developed his imagination and can in some measure predict what minerals the rock contains. He will be pretty certain, for example, if the phenocrysts in a porphyritic rock are quartz, that the fine groundmass is a mixture of quartz and orthoclase. A heavy, black, fine-grained rock, he knows, is almost sure to consist of plagioclase, augite, magnetite and more or less glassy base. Black prismatic phenocrysts are either augite or hornblende or possibly a rare pyroxene or amphibole. Of course the student will make mistakes; even experienced petrographers are not infallible. One advantage of the microscopic study is that the student realizes the limitations of sight determination. The added interest and knowledge of rocks gained more than compensates for the time taken up with a short study of optical mineralogy. The lack of time will be the objection raised against my plan, but whatever the time available, half of it may well be spent in the study of elementary crystal optics so that minerals may be identified in slides. The above remarks apply especially to igneous rocks, as there is less variety in the sedimentaries and metamorphics and the loose nomenclature used for them makes them easier to classify. It may be urged that the broader chemical and geological features should be emphasized, that is, petrology rather than petrography should be taught. The writer is in entire accord with this view, but unless the student makes numerous rock analyses, how better can he learn to appreciate the chemical side of petrography than by a study of slides?

My views on this subject naturally depend somewhat upon my opinion of the recently proposed megascopic or field classification of igneous rocks. One of the serious criticisms applied to the ordinary qualitative classification is the redefinition of rock names. Yet in this field classification we have such names as syenite and basalt redefined to suit the megascopic determination. Perhaps the distinctions made on a megascopic basis are good ones, but terms that do not conflict with ordinary usage are preferable. Such names as leucophyrs are all right, but it seems hardly fair to call an anorthosite a syenite when the plagioclase may be determined at sight, since all its affinities are with the gabbros. It hardly seems reasonable to call a dark-colored porphyritic rock a basalt-porphyry when quartz or orthoclase phenocrysts are visible. Typical andesites can readily be distinguished and it hardly seems necessary to call them felsite-porphyries. The writer believes that the usually accepted grouping of igneous rocks into granites, rhyolites, syenites, trachytes, diorites, andesites, gabbros, diabases, basalts and peridotites is the best one to follow even in megascopic work. Of course one can not always make the distinctions recognized in this classification, but this is also true of any rock classification. Often one is fortunate if he can distinguish an igneous from a metamorphic rock in the hand specimen. One of the principal reasons for studying petrography is that the student may be able to read geological literature intelligently. Even though the ordinary classification is purely qualitative and the personal equation large, yet the names for the common rocks given above are fairly definite in their meaning as used in the literature for the last twenty-five years or so.

In conclusion the writer would summarize his views as follows: The purpose of the petrography course is to give the student a general idea of rocks, to enable him to make rough determinations of rocks at sight, and to help him in the understanding of geological literature. With these things in mind the study of hand-specimens and slides should go hand-in-hand. The student becomes familiar with the common rock types and so can determine other rocks by mental comparison with those he has studied in detail. The usual classification (granites, rhyolites, etc.) is suitable for megascopic determinations and is also the one recognized in the literature.

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SCIENTIFIC BOOKS

The Mutation Theory. Volume I. "The Origin of Species by Mutation." By Hugo de Vries. English translation by Professor J. B. Farmer and A. D. Darbishire. Pp. xvi + 582. Four colored plates and 119 text-figures. Chicago, The Open Court Publishing Co. 1909.

The publication of the German work, "Die Mutationstheorie," by Hugo de Vries, marks an epoch, not only in the history of botany, but of all biological science; and the mutation-theory itself is, in all probability, the most important contribution to evolutionary thought since the publication of Darwin's "Origin." The importance of de Vries's work lies not only in the elaboration of the theory of saltation as an adequate method of the origination of new forms in the organic world, but (and more especially) in removing the entire question forever from the realm of ineffectual debate, and establishing it upon the firm basis of experimentation.