Yale University last year for the erection and endowment of the Raleigh Fitkin Memorial Pavilion at the New Haven Hospital.

BY the will of Mrs. Gladys Carroll Marvin, Harvard University receives $100,000 conditional on the payment by the university of a life annuity of $10,000 to Mrs. Mabel M. Trowbridge, mother of Mrs. Marvin.

THE *Journal* of the American Medical Association reports that the offer of more than $1,000,000 by the Rockefeller Foundation to the medical school of the University of Minnesota has been withdrawn.

THE University of Toulouse will celebrate on June 9 the seven hundredth anniversary of its foundation. It is expected that the president of the republic will attend and that there will be a large representation of scholars and scientific men from France and from abroad.

DR. HAROLD L. AMOSS, associate professor of medicine at the Johns Hopkins University, has been appointed professor of medicine at Duke University.

DR. J. V. HOFMANN has resigned his position as assistant director of the Pennsylvania State School of Forestry to accept the appointment as head of the division of forestry at the State College of North Carolina at Raleigh. Dr. Hofmann took up his work in February.

DR. D. W. BRONK has been appointed professor of physiology and biophysics and head of the department of zoology and physiology at Swarthmore College. Professor Bronk has recently returned from England where he spent the past year in research at the University of Cambridge and the University of London.

DR. RAYMOND H. WALLACE, National Research Council Fellow at Columbia University, has been appointed assistant professor of botany at the Connecticut Agricultural College. Associate Professor G. Safford Torrey has been appointed professor of botany, and succeeds Dr. Edmund W. Sinnott as head of the department.

DR. MAX KLEIBER, of the staff of the Swiss Federal Polytechnic School at Zurich, will head the net energy studies to be undertaken in the animal husbandry division at the branch of the college of agriculture of the University of California, at Davis.

COLONEL F. J. M. STRATTON, secretary of the International Astronomical Union, has been elected as Professor Newall's successor with the title of professor of astrophysics in the University of Cambridge and director of the Solar Physics Observatory.

Two new professorial chairs have recently been established in Paris. The first is the chair of phthisiology, whose holder is Dr. Leon Bernard, formerly of the chair of hygiene, which is now occupied by Professor Tanon, and a chair of hydrology and climatotherapy whose first occupant is Dr. Piéry.

A CHAIR on the clinical aspects of tuberculosis and respiratory diseases has been established at the University of Rome. The newly appointed occupant of the chair is Professor Eugenio Morelli, the pupil and successor of Forlanini.

DR. HEINRICH VOGT, professor of astronomy in the University of Heidelberg, has been called to Jena.

DISCUSSION

NOTE ON THE GEOLOGIC AGE OF PITHECANTHROPUS AND EOANTHROPUS

IT is a singular coincidence that the original estimates of the geologic age of both the Trinil ape-man of Java (*Pithecanthropus*) and the Piltdown dawn-man of Sussex (*Eoanthropus*) are being revised at the present time.

Pithecanthropus when discovered was regarded as of Upper Pliocene age—a proper geologic position for the supposedly ancient ancestral link in the human chain. It now seems almost certain that *Pithecanthropus* is of Middle Pleistocene age, since, as Dietrich and Osborn have pointed out, Proboscidean and other quadrupeds among which *Pithecanthropus* lived are apparently Middle Pleistocene and *certainly* not Lower Pleistocene, still less Pliocene. Professor Osborn has written Professor Dietrich, of Berlin, to go over this paleontologic evidence again because unless it can be challenged it proves that *Pithecanthropus* is another instance of the survival of a very primitive type of mammal in a primitive forested environment where food was plenty, there was little need of clothing, and safety was assured by concealment or flight rather than by combat with weapons.

On the other hand, the case of *Eoanthropus* (Piltdown man) is quite different; its darkly colored and thoroughly fossilized skull fragments are intermingled with fragments of grinding teeth of Proboscideans of unquestionable Upper Pliocene age, namely, the species *Archidiskodon planifrons* and *Anancus arvernensis*. If *Eoanthropus* belongs with these teeth it is surely Upper Pliocene, but intermingled in the Piltdown gravels are other tooth fragments of somewhat lighter color belonging to the hippopotamus which in Great Britain was a Lower Pleistocene inhabitant. By this mixed evidence it is demonstrated that the

Eoanthropus skull was probably a washout river channel specimen from some old sand or gravel bank and the problem is whether it came from a Pliocene gravel bank with the primitive elephant and mastodon, or from a Pleistocene gravel bank with a primitive hippopotamus.

In either case *Eoanthropus,* the dawn-man of Sussex, now appears to be of greater geologic age than *Pithecanthropus,* the Trinil ape-man. Thus in the course of the last eighteen years *Eoanthropus* and *Pithecanthropus* have changed places in the geologic time scale.

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GROUP THEORY AND APPLIED MATHEMATICS

PROFESSOR H. WEYL, of Zurich, Switzerland, recently published a book under the title, "Gruppentheorie und Quantenmechanik," Leipzig, 1928, which he regards as half mathematics and half physics, and hence it belongs to the borderland of two large domains of science. Group theory is not a complete stranger in this borderland. Its usefulness in crystallography, for instance, is well known. The fact that it appears to be useful in such a new field of mathematical physics as quantum mechanics may perhaps be regarded as a sign that the mathematical public is becoming more conversant with the fundamental notions involved in group theory and hence writers no longer hesitate to express themselves in the language of this subject in case they are familiar with it.

Professor Simon Newcomb once said[1] that "the mathematics of the twenty-first century may be very different from our own; perhaps the schoolboy will begin algebra with the theory of substitution groups, as he might now but for inherited habits." We seem to be as yet very far from such a fundamental change in our courses in elementary mathematics, and the change is not likely to come until applied mathematicians make much more use of this theory. Two fundamental aspects of mathematics are idealization and actualization. As regards group theory the former concerns itself with a study of the structure and the abstract properties of groups, while the latter makes groups useful in the intellectual penetration of our actual surroundings in the physical world. The development of these two aspects of the subject seems to call for very different types of mind, and the latter naturally gives rise to the more extensive developments. It is in this field that group theory seems to be as yet in its infancy and hence one welcomes the more heartily such works as those of Professor Weyl.

In connecting group theory and quantum mechanics Professor Weyl directs attention to the fact that the former subject is in reality very old and may have been at the base of the early developments of ornaments, especially by the ancient Egyptians. He thus partly supports the view that the earliest developments in mathematics may have been inspired by a sense of beauty and harmony as exhibited in symmetrical geometric figures, and that when Euclid wrote his "Elements" the fundamental concept of group was so fully ingrained in the minds of the people that Euclid did not regard it as necessary to mention it explicitly. The emphasis which it began to receive during the nineteenth century is so marked that the late Felix Klein regarded it as the most characteristic feature of the mathematical developments during this century. Its essence is a study of a few fundamental laws of mathematical operations, and it has created for itself a marvelously rich but isolated mathematical universe which has proved to be very attractive to a number of pure mathematicians, who are accustomed to ignore their actual physical surroundings in their intellectual activities and to study ideal situations.

While the applied mathematician is not accustomed to such isolation and hence can not be expected to enter with as much enthusiasm as the pure mathematician upon the study of the particular laws involved in group theory, yet he seems to realize more and more that the actualization of such a rich store of abstract mathematical knowledge is likely to extend his insight into our actual physical surroundings. Hence it seems reasonable to expect that in line with the work noted above more and more frequent use of group theory will be made in the future by applied mathematicians, but that some of the most optimistic statements relating to this use will not be realized in view of the fact that those who are continually reminded of laws which are not considered in group theory will be more forcibly impressed by its limitations than the idealists.

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THE MOVEMENT OF SAP IN PLANTS

VERY great interest has been roused in Europe and America by the striking researches and discoveries of Sir J. C. Bose on the unity of physiological mechanism in the plant and in the animal. After the conclusion of his lecture at the University of Vienna, Sir J. C. Bose was kind enough to lend me his instruments for the repetition of his more important experiments in the institute of plant physiology of the university. As this is the first time that his

[1] *Bulletin of the American Mathematical Society,* 3: 107. 1893.