

was participating in Amundsen's expedition to the North Pole.

NATURE states that further details of Miss Garrod's discovery of a skull, presumably of Mousterian age, at Gibraltar, tend to confirm the first impressions of its importance. In addition to the frontal bone another large piece of bone was found, but owing to the hardness of the matrix in which it is imbedded it is impossible yet to say whether it is the parietal or the occipital. Decision on this and other points must wait until it has been cleared.

UNIVERSITY AND EDUCATIONAL NOTES

CHARLES HAYDEN, a New York banker, retiring president of the Alumni Association of the Massachusetts Institute of Technology, has given \$100,000 toward the dormitories to be erected at the institute, planned to accommodate 800 students.

DEAN ARTHUR M. GREEN, Jr., of the engineering school at Princeton University, has announced plans for a proposed half-million-dollar engineering building. The Princeton Engineering Alumni Association is raising an additional \$350,000 to equip the building. The new building will be of stone, three stories high, with a basement for service rooms, and will provide 70,000 square feet of floor space. It will house the mechanical engineering laboratory, the electrical laboratory, the hydraulic laboratory and the machine shop.

DR. WILLIAM BENJAMIN SMITH, professor of physics in the University of Missouri, 1885-88, and professor of mathematics, 1888-93, has given to the university library 325 volumes in the field of mathematics and physics; 300 volumes in philosophy; 900 volumes on theology and religion, and 525 volumes on history, literature and the world war. Dr. Smith's library includes numerous rare books.

LAFAYETTE COLLEGE has appointed Freeman Ward, Ph.D., professor of geology at the University of South Dakota and state geologist of South Dakota, to the chair of geology vacant by the death of the late Professor Peck.

AT Brown University, Dr. Mark H. Ingraham, of the University of Wisconsin, has been appointed assistant professor of mathematics, and Paul N. Kistler, of Lehigh University, assistant professor of mechanical engineering.

DR. DAVID H. BERGEY has been promoted to an assistant professorship of hygiene and bacteriology in the medical school of the University of Pennsylvania. Dr. Morton McCutcheon has been appointed assistant professor of pathology.

THE following promotions will take effect at George Washington University next autumn: Dr. Edwin A. Hill, to be professor of chemistry; Arthur F. Johnson, to be associate professor of mechanical drawing; Norman B. Ames, to be associate professor of electrical engineering, and Paul H. Brattain, to be assistant professor of chemical engineering.

DR. W. E. H. BERWICK, reader in mathematics in the University of Leeds, has been appointed to the chair of mathematics at the University College of North Wales, Bangor.

ARTHUR HUTCHINSON, F.R.S., fellow of Pembroke College, University of Cambridge, has been elected to the professorship of mineralogy, in succession to the late Professor W. J. Lewis.

DISCUSSION

THE STRUCTURE AND FORMATION OF BAST FIBERS IN FLAX

MICROCHEMICAL work upon the history of bast fiber wall development in flax (*Linum usitatissimum*) has led to a somewhat different conception of cell wall formation and to the discovery of some interesting facts concerning cell wall structure. Bast fiber cells are distinguishable in the stem tip about the time that the vascular elements are clearly differentiated. The primary walls consist of cellulose containing pectose in the region of the middle lamella. Subsequent additions to this membrane are not continuous and gradual but by successive deposits of definite cellulose lamellae. The lamellae first appear in a gelatinous and much infolded condition, out of contact with the existing wall. Each lamella is pushed against the already existing cell wall, where its gelatinous consistency permits it to be closely fitted. In this position it loses its gelatinous consistency and becomes a part of the wall itself. The wall of the bast fiber then is formed by periodic deposits of cellulose lamellae. There is no cementing material between the lamellae, and by the use of suitable reagents the layers may be readily separated from each other, even in mature fibers. The zonation visible in the cross-section of the bast fiber results from these periodic deposits. The fine dark lines do not represent actual material, as has been supposed, but are merely boundaries between the successive lamellae.

When swollen with concentrated sulfuric acid and subjected to pressure while in the swollen condition, the lamellae reveal their basic structure. Each lamella is formed of spirally wound fibrillae and the direction of the spiral is reversed in each successive lamella. The fibrillae give parallel extinction under polarized light and have a high birefringence. The fibrillae are therefore crystalline. The bast fibers of