the British Association. Evidently only scientists of very high standing and capable of delivering excellent addresses will be invited. There will be no limitations on the subjects that may be chosen or on the manner of their treatment, but it is expected that the addresses will be of the general quality of the presidential addresses of the two associations. It will, of course, be gratifying if from time to time the subjects treated are of international interest. Whether or not such subjects are chosen, the visiting scientists will add to the attractions of the meetings, and the publicity given their addresses by the daily press will promote cordial international relationships. It is hoped that the plan will prove so successful that it will be expanded to include corresponding arrangements with similar scientific organizations in other countries.

Under the terms of the second resolution, each association will elect as honorary members the principal administrative officers of the other association. The honorary members will receive the announcements and programs of the association to which they are elected. For example, the honorary members elected by the American Association will receive the general programs of the meetings, and also the four issues of SCIENCE each year which contain the preliminary announcements and the reports of the two meetings. The purpose of this reciprocal arrangement is to familiarize the officers of each association with the work of the other. Although the British and American associations are generally similar, each has its special excellent points about which the other might well know. The American Association certainly has much to learn from the British about organizing excursions and social functions, and especially about making the delivery of presidential addresses dignified and impressive events.

The British Association took another step which may mark a turning point in its history. In order to facilitate investigations of the interrelations of science and society and to promote cordial international relations among scientists, the council and the general committee authorized the organization of a division of the British Association to consider these special fields. The work of the new division will be directed by a committee to be nominated by the council of the association and elected by its general committee. The division is given very broad powers, including that of holding meetings at any times and places. In this more formal way the British Association will undertake to do even more than the American Association is attempting to do through its "Science and Society Conferences" organized by the Section on the Social and Economic Sciences.

F. R. MOULTON,
Permanent Secretary, A.A.A.S.

SCIENTIFIC NOTES AND NEWS

DR. ALBERT CHARLES CHIBNALL, professor of biochemistry at the Imperial College of Science and Technology, University of London, will give the Hepsa Ely Silliman Memorial Lectures for the year 1938 at Yale University. The title of his lectures is "Protein Metabolism in the Plant." The lectures will be seven in number; on October 12, 14 and 17, they will deal with protein metabolism in seedlings; the fourth lecture on October 19 will deal with the synthesis of amino acids and amides in the plant. The concluding lectures on October 21, 24 and 28 will deal with the general subject of protein metabolism in leaves.

DR. RICHARD E. SCAMMON, distinguished service professor in the Graduate School of the University of Minnesota, will give on September 23 a lecture before the New York University Chapter of Sigma Xi on "The universalist tendency in seventeenth century science and medicine as exemplified by the activities of the versatile Dr. Petty."

PROFESSOR C. O. E. BERGSTRAND, professor of astronomy in the University of Uppsala, has been elected correspondent for the Section of Astronomy of the Paris Academy of Sciences, in succession to the late Professor L. Picart, professor of astronomy in the University of Bordeaux.

THE Bene Merenti silver medal of the Bavarian Academy of Sciences has been awarded to Professor C. F. van Oyen, of Utrecht.

AT the recent meeting of the British Medical Association the Sir Charles Hastings clinical prize was presented to Dr. J. W. McFeeters; the Stewart prize to Sir Patrick Laidlaw and, as already reported in SCIENCE, the Dawson Williams Memorial prize to Professor Leonard Parsons. The Katherine Bishop Harman prize for 1938 was awarded to Dr. B. S. Platt.

THE Dr. Jessie MacGregor prize in medical science of the Royal College of Physicians of Edinburgh has been awarded to Dr. Susanne Paterson for her work on the therapeutic uses of progesterone.

DR. TRUMAN L. KELLEY, of Harvard University, was elected president of the Psychometric Society at the annual meeting held at the Ohio State University on September 7 and 8. He succeeded Dr. J. P. Guilford, of the University of Nebraska, who gave the presidential address, which was entitled "A Study in Psychodynamics."

DR. HAROLD F. BLUM, who recently resigned as associate professor of physiology at the University of California Medical School to join the staff of the

Washington Biophysical Institute, has been elected a member of the Association des Physiologistes de langue française.

ACCORDING to the *Museums Journal* the Museum Association of Great Britain at its annual meeting at Belfast elected the following officers and councilors: *President,* Viscount Bledisloe; *Honorary Treasurer,* D. A. Allan, Liverpool Public Museums; *Honorary Secretary,* D. W. Herdman, Art Gallery and Museum, Cheltenham; *Honorary Editor,* W. E. Swinton, British Museum (Natural History); *Councilors,* Charles Carter, Plymouth Museums and Art Galleries; Sydney L. Davison, Lady Lever Art Gallery, Port Sunlight; James Eggleton, Glasgow Art Galleries and Museums; E. I. Musgrave, Wakefield Museum and Art Gallery.

HAROLD L. HAZEN, associate professor of electrical engineering, has been promoted to a professorship and has been made head of the department of electrical engineering at the Massachusetts Institute of Technology. Professor Hazen succeeds Professor Edward L. Moreland, whose appointment as dean of engineering was announced during the summer.

DR. WILLARD E. HOTCHKISS, formerly president of the Armour Institute of Technology, expert in industrial management, has been appointed Maurice Falk professor of social relations at the Carnegie Institute of Technology. Dr. Hotchkiss will organize the new program of social studies for engineering students, thus getting under way an educational project which has been planned for several years and which is made possible by a grant of $500,000 to the endowment fund from the Maurice and Laura Falk Foundation of Pittsburgh. This gift was announced in December, 1937.

DR. FRANCIS OWEN RICE has resigned from the faculty of the Johns Hopkins University to become professor of chemistry and head of the department of chemistry of the Catholic University of America, Washington, D. C.

DR. WALTER THOMAS, formerly professor of phytochemistry in the department of agricultural and biological chemistry of the Pennsylvania State College, has been named professor of plant nutrition in the department of horticulture.

DR. SAUNDERS MACLANE has been appointed assistant professor of mathematics at Harvard University.

ROSCOE D. HUGHES, of the department of zoology at Columbia University, has been appointed associate in biology at the Medical College of Virginia.

PROMOTIONS made at the Medical College of the University of Virginia for the session 1938–39 are: Dr. Stuart Michaux, professor of gynecology; Dr. R. H. Courtney, professor of ophthalmology; Dr. R. Finley Gayle, professor of neuropsychiatry; Dr. Thomas W. Murrell, professor of dermatology and syphilology; Dr. Lee E. Sutton, Jr., professor of pediatrics; and Dr. William D. Suggs, assistant professor of gynecology. Dr. Wyndham B. Blanton resigned last session as professor of history of medicine and has been made associate professor of medicine. Dr. Joseph F. Geisinger has been appointed professor of clinical urology. In recognition of their many years of service to the institution, following their retirement on July 1, emeritus professors were appointed as follows: Dr. St. George T. Grinnan, pediatrics; Dr. Emory Hill, ophthalmology; Dr. E. P. McGavock, dermatology and syphilology; Dr. Charles R. Robins, gynecology, and Dr. Beverley R. Tucker, neuropsychiatry.

DR. GORDON M. SHRUM, professor of physics at the University of British Columbia, has been appointed head of the department.

DR. F. L. WELLS, formerly in charge of the Psychological Laboratory at the Boston Psychopathic Hospital, has been appointed psychologist to the department of hygiene of Harvard University. His office address is 13 Holyoke Street, Cambridge, Mass.

RALPH RUSSELL has been appointed to the staff of the Division of Fishery Industries of the Bureau of Fisheries as associate fishery economist.

DR. GEORGE F. POTTER, for the past eighteen years head of the department of horticulture of the University of New Hampshire, will take charge of the laboratory of nurseries and experimental farms in connection with the government project at Bogalusa, La., on the growth and development of the tung oil industry.

FRASER MACCARTNEY, student gardener from the New York Botanical Garden, will spend a year at the Royal Botanic Gardens, Kew. He is taking the place of P. A. Chandler, who will fill Mr. MacCartney's place in New York. This is the third exchange arranged under the auspices of the English-Speaking Union.

AT its meeting on July 25, the National Advisory Cancer Council recommended the following grants-in-aid: Harrison S. Martland, City Hospital, Newark, N. J., $1,425 for the further study of osteogenic sarcoma in radioactive persons; $7,500 to the University of Chicago for researches in carcinoma of the stomach in the relation of hormones to ovarian cysts and a study of carcinogenic substances in cancerous and precancerous tissue; $1,000 to B. R. Nebel, New York State Agricultural Experiment Station, for the study of the action of phenanthrenes on plant tissue cells;

$3,452 to the University of Cincinnati for improvement in the diagnosis and treatment of cancer; $6,600 to the American College of Surgeons, Chicago, for a study of hospitals and clinics with reference to clinical cancer service; $4,200 to Dr. John J. Bittner, for a continuation of his studies on the relation of nursing to breast cancer in mice.

UNDER the direction of Edward P. Davis, topographical engineer of the U. S. Geological Survey, Glacier Park has been remapped. Prior to this summer no work had been done on the park since 1912. Twenty-five years later the National Park Service made several additions to the map of the U. S. Geological Survey. It is expected that the map will be available next year.

A SUB-OFFICE of the U. S. Geological Survey was recently established at Jackson, Mississippi, from which will be supervised the surface water investigational work conducted by the survey in cooperation with the state of Mississippi, as a result of cooperative funds provided by the last legislature. Edward B. Rice, associate engineer, will be in charge. He will be under the general supervision of the district office at Montgomery, Ala. A sub-office has also been established recently at Baton Rouge, La., resulting from cooperative surface water investigations started in that state. Ralph E. Marsh, assistant engineer, is in charge under the general supervision of the district office at Montgomery, Ala.

A SCIENTIFIC expedition left British Guiana on September 6 to collect specimens of the bird, animal and fresh-water fish life at the Roraima Plateau, on the British Guiana-Venezuela boundary. Members of the expedition include P. S. Peberdy, curator of the British Guiana Museum; A. Pinkus, representing the Michigan State Museum and the New York Botanical Garden, and T. Pain, curator of the Chelmsford and Essex Museum, England.

DISCUSSION

THE UNDERTOW

MOST of our elementary geological text-books contain definite statements regarding the existence and behavior of the undertow. It is described as a subaqueous, outward flowing current which is present when the wind blows perpendicularly on a lee shore. It is said to be caused by the piling up of the water as a result of the shoreward movement caused by the wind. This outward moving current is believed to have its movement modified at times so that it is slowed up or even temporarily reversed by each incoming wave, but its average movement is outward. It is generally regarded as being an important factor in the sorting and transportation of sediments on the underwater terrace.

However, some years ago Professor W. M. Davis[1] raised the question as to the actual existence of such a current and presented a rather complete argument to show that what had previously been regarded as the undertow was only the backwash of the waves which had been mistaken by more or less frightened swimmers for an outward moving current. He ended his article by asking skilled swimmers to send in accounts of their experiences with shore currents.

In the replies received some expressed a disbelief in the existence of dangerous outward flowing subaqueous currents; other experienced swimmers were just as certain that, at least along some shores, such currents are present and sent in detailed accounts of their experiences.[2]

These replies were summed up in an article by Professor Davis[3] and there the matter was dropped for a time.

Recently Professor F. P. Shepard again brought up the question in an article, "Undertow, Rip Tide or Rip Current"[4] in which he expresses a disbelief in the undertow as generally understood but describes river-like movements of the water perpendicular to the shoreline running outward at intervals from a lee shore. These currents reach the surface and are said to occur a few hundred yards apart along a shoreline on which the waves are breaking. For this type of water movement he proposes the term "rip current."

With the above in mind a study was undertaken the past summer for the purpose of determining the existence or non-existence of the undertow. While the investigations as conducted did not prove the existence of an undertow that might be dangerous to swimmers, yet if by the term "undertow" is meant a current below the water surface that moves outward approximately perpendicular to the shoreline then the investigations show very definitely the existence of such currents under certain conditions, and the inference is very strong that they may be swift and dangerous during storms.

Obviously, direct observation of the behavior of the movements of the water is very difficult on a large body of water when a heavy sea is running. Therefore it was decided to begin the study by giving attention to the behavior of small water bodies. The first observa-

[1] SCIENCE, 61: 206–208, 1925.
[2] SCIENCE, 61: 444, 468, 1925.
[3] SCIENCE, 62: 30–33, 1925.
[4] SCIENCE, 84: 181–182, 1936.