stimulation gave impulses in a single sensory nerve fiber. It was thus shown that the discharge from a sense organ consists of a series of nerve impulses of a definite frequency, which increases with the intensity of the stimulus and decreases with the duration of a constant stimulus. He thereby demonstrated that the objective basis for varying intensities of sensation and the subjective phenomenon of adaptation is a variation in the frequency and number of nerve impulses reaching the central nervous system. The fundamental character of the messages from a wide variety of sense organs he has shown to be the same, as for instance from the receptors for tension, pressure, touch, light, pain and indeed from even an injured isolated nerve fiber itself. These two researches laid the foundation for a more intimate understanding of pain.

Subsequently Adrian extended his work to an investigation of the impulses in single motor nerve fibers, developing a technique which made it possible to transect the nerve trunk so as to leave intact but a single unit. Thus it was found that the characteristic discharge from a motor nerve cell is a series of impulses of a frequency depending upon the intensity of central excitation. It was further discovered that the strength of the muscular contraction is regulated by the frequency of this motor discharge as well as by a variation in the number of active units. He has recently applied a similar analysis to the sympathetic nerves that go to the blood vessels and control the contraction of their walls thus regulating blood pressure.

In summary, the work of Sherrington has indicated how the sensory impulses recorded by Adrian act on the central nervous system and build up a state of central excitation which gives rise to the impulses going out to the muscles to regulate movement. The one series of researches has been concerned with the messages going into and out of the central nervous system, the other with the manner in which they are integrated to give the coordinated activity of the complex living organism.

SCIENTIFIC EVENTS

THE ANDREW BALFOUR MEMORIAL

A TABLET in the entrance hall of the London School of Hygiene and Tropical Medicine to the memory of Sir Andrew Balfour, the first director of the school, was unveiled by the Earl of Athlone, chancellor of the University of London, in the presence of a distinguished gathering, on October 6. The *British Medical Journal* reports that the tablet, by Mr. Allan Howes, who has already carried out work in the school, is of Roman stone, with a bronze portrait head in bas-relief. The inscription runs:

A TRIBUTE OF GRATITUDE AND AFFECTION
TO
ANDREW BALFOUR
K.C.M.G., C.B., M.D., LL.D., F.R.C.P.
1873–1931
IN MEMORY OF HIS DEVOTION TO THE
CAUSE OF TROPICAL HYGIENE AND OF
HIS SELF-SACRIFICING LABOURS AS
DIRECTOR OF THIS SCHOOL
"THROUGH THE BATTLE, THROUGH DEFEAT,
MOVING YET, AND NEVER STOPPING,
PIONEERS! O PIONEERS!"

Sir Holburt Waring, on behalf of the Court of Governors and the Board of Management, in inviting the chancellor to perform the ceremony, explained the origin of the memorial. The school council originally set up a small committee, to which were added a number of friends of Sir Andrew Balfour outside the school staff. It was decided to open a memorial fund with the object of erecting the tablet and of providing means to enable students, preferably from over-seas, to pursue courses of study at the school. The total subscribed to date was £1,200, and a promise of a bequest of £1,000 had been received. He read a letter from Sir James Crichton-Browne, a kinsman of Sir Andrew, in which he wrote of him as one "who combined the finest traits of the Scottish character with world-wide sympathies and breadth of view, and added to intellectual grasp a singular capacity for friendship."

The Earl of Athlone said in part:

Andrew Balfour was a man of a thousand endearing qualities, and for every such quality he drew to himself a thousand friends. He reminded the gathering of the outstanding events in his career, his choice of public health as his lifework, his service in the typhoid camp at Pretoria during the South African war, his appointment as director of the Wellcome Tropical Research Laboratories at Khartum, his transformation of the insanitary Khalifa into a model town from the precincts of which malaria was banished, his service during the great war in France, Salonika, Egypt and East Africa, his membership of important expert committees and service as adviser to colonial administrations during the post-war era, and finally, the last of his labors, the building, equipment and organization of the London School of Hygiene and Tropical Medicine, where the memory of his inspiring personality was still so vivid.

Professor W. W. Jameson, who received the memorial in the absence of Sir Austen Chamberlain, said

that others could testify to Sir Andrew's work and achievements in many parts of the Empire, but only a member of the staff of the school could speak of his self-sacrificing devotion to the interests of that great institution, and of the deep affection in which he was held by every one of them.

COMMITTEE ON CONSTRUCTION COSTS

THE Secretary of Commerce, Roy D. Chapin, has announced the appointment of a construction committee composed of fourteen nationally known engineers, architects, builders and contractors, to encourage the use of new wood construction methods. Major H. S. Bennion, director of engineering, National Electric Light Association, New York City, is the chairman of the committee which will cooperate with governmental agencies in applying these new construction systems to American conditions.

During and since the war engineers in various parts of the world have developed entirely new principles of wood construction, employing metal or wood connectors for the strengthening of joints. Through the use of these connectors the wood joints customarily used heretofore are increased in strength from three to six times. The National Committee on Wood Utilization for years has made a thorough study of the practical application of more than sixty different types of connectors and the Forest Products Laboratory of the Department of Agriculture has made hundreds of tests of the principal types of connectors as applied to American woods. Without these tests the application of these connectors to American conditions would have been difficult. The Bureau of Standards has made the necessary metallographic tests of the metal used. In this manner the governmental agencies chiefly concerned have joined hands and are cooperating with leading national organizations of engineers, architects and builders, in applying the system to American conditions. The European experience during and since the war has demonstrated their practicability.

In addition to Major Bennion, the members of the National Committee on Wood Utilization appointed on the wood construction committee are:

Wallace Ashby, Washington, D. C., representing the American Society of Agricultural Engineers.

W. H. Booth, Philadelphia, representing the American Petroleum Institute.

Ralph Budd, Chicago, representing the American Railway Association.

Clement E. Chase, Philadelphia, representing the American Society of Civil Engineers.

William F. Chew, Baltimore, representing the National Association of Builders Exchanges.

A. S. Downey, Seattle, representing the Associated General Contractors of America.

Captain Ralph H. Higgins, airport consulting engineer, East Orange, New Jersey.

R. R. Horner, Clarksburg, West Virginia, representing the American Institute of Mining and Metallurgical Engineers.

B. L. Knowles, Worcester, Massachusetts, representing the Associated General Contractors of America.

Henry G. Perring, Baltimore, representing the American Engineering Council.

Colonel D. H. Sawyer, director, Federal Employment Stabilization Board, U. S. Department of Commerce.

Searcy B. Slack, Atlanta, representing the American Association of State Highway Officials.

F. Leo Smith, Washington, D. C., representing the American Institute of Architects.

CARIBBEAN BOTANICAL SURVEY

G. PROCTOR COOPER, 3d, formerly on the staff of the Yale School of Forestry and at present associated with the New York Botanical Garden as collaborator, left New York the first week in November for the West Indies and the Caribbean Coast of South America to continue his botanical and forestry studies. The expedition has been organized jointly by Mr. and Mrs. Cooper and they will use their schooner yacht *White Cloud* as their base of operations during the entire eight months in the field.

The personnel of the party, besides Mr. and Mrs. Cooper, consists of Mr. William C. Shepard, of New Haven, a retired forester from Cornell and Yale; Mr. Charles Edward Hill, of Brookline, Massachusetts; Mr. T. Windsor Ford, of Cleveland Heights, Ohio, and Mr. Norman E. Hawes, a recent Yale Forestry School graduate, who will collect insects and spiders for museum and study purposes.

The Island of Dominica of the British Leeward group has been chosen as the first region for intensive study because of the dense virgin forest areas covering most of this small but mountainous island. The hot mineral springs at various parts of the interior will be visited and the flora in the immediate vicinity compared with that on other parts of the island to determine what effect, if any, the warm waters have on the types of vegetation. The floras of various elevations, from sea level to the mountain peaks at 4,500 feet, will be compared and, if possible, the transition zones will be noted so as to determine those species which are adapted to all elevations and those which are confined to any one particular level or site class.

The floras of the islands of Martinique and Guadeloupe will be carefully studied for comparative purposes. Various small islands in the vicinity and throughout the Leeward group will also be visited for observation. The next region for intensive operation will probably be British Guiana. The schooner will be left at Georgetown and Mr. Cooper and Mr.