

and the Fritz Progl prize to Dr. Moriz Niessner for his micro-analytical investigations on alloys.

#### Imperial Academy of Japan

At a meeting of the Imperial Academy of Japan on May 10, annual medals and prizes were awarded to the following: Kyosuke Kindaichi for his studies on the Ainu epic "Yukar"; Kiyoo Wadati for his investigations on deep focus earthquakes; Ikutaro Hirai for his work on the cause of the meningitis-like disease frequently observed among Japanese suckling children; Tatu Aida for genetical studies on the body colour of *Aplocheilus latipes*; Motojiro Matuyama for his geophysical investigations on gravity anomalies and magnetism of basaltic rocks; Shintaro Uda for research on ultra-short electro-magnetic waves. The Mendenhall Memorial Prize was awarded to Seishi Kikuchi for his studies on the diffraction of electron rays through thin mica plates.

#### Visceral Sense Organs

THE fourth Victor Horsley Memorial Lecture was delivered on July 20 in the Medical School of University College Hospital by Prof. E. D. Adrian, who discussed the "Visceral Sense Organs". The action of the sense organs in the lungs and in the great blood vessels can be studied by recording the nervous messages which they send to the brain stem, a method made possible by the use of valve amplification to magnify the electric changes in the sensory nerve fibres. The normal sensory discharges in the vagus and carotid sinus nerves were demonstrated by gramophone records in which the nerve impulses were converted into sounds varying in pitch with the frequency of the discharge. The sense organs in the lung resemble the muscle spindles, giving a rhythmic discharge of impulses so long as the tissues are stretched. In normal breathing the discharge only occurs at inspiration, but there are some endings which are excited by collapse of the lung, and these may be the cause of rapid breathing in pathological conditions. The sense organs in the aorta and sinus caroticus behave like those in the lung and give a faithful signal of the blood pressure. Both systems act as governors to keep the respiratory and vascular systems working within safe limits, and, as with all sense organs, their effect depends upon messages which are graded by changes in impulse frequency and in the number of units in action.

#### New Motor-Boat Record

ON July 18, Mr. Kaye Don, piloting Lord Wakefield's motor-boat *Miss England III*, twice broke the previous world's speed record for motor-boats. In his first attempt Mr. Don covered the measured mile in 35.4 sec. and 35.2 sec. (117.43 miles an hour), and in the second attempt his times were 34.4 sec. and 34.8 sec. (119.81 miles an hour). The previous record was set up by Mr. Garfield A. Wood, who achieved 111.71 miles an hour. Sir Henry Segrave's record on Lake Windermere when he was killed in 1930 was 98.96 miles an hour. *Miss England III* was designed and built by Messrs. John Thornycroft and Co., Ltd., at Hampton-on-Thames. It is a single-step vessel and

is fitted with two propellers. The boat is fitted with two Schneider Trophy type supercharged Rolls-Royce engines, developing 2200 h.p. and consuming about five gallons of fuel a minute. The length of the hull of the boat is 35 ft., and the maximum beam is 9 ft. 6 in.

#### High Speed and Flight

A SERIES of comprehensive experiments upon the possibilities of high-speed flight has been carried out in the Langley Field High Speed Wind Tunnel of the National Advisory Committee for Aeronautics in the U.S.A. Air speeds up to 800 miles an hour, which is faster than the speed of sound, have been reached. It has been definitely established that with the present conventional form of wing section there is so great an increase in drag at about 600 miles an hour that it will be impossible to carry sufficient power to overcome it, assuming the present methods of conversion of fuel to air thrust. This is confirmed by experience with high-speed propellers, the blade tips of which may easily be travelling at a peripheral speed approaching the velocity of sound. In such cases their outer portions may be actually exerting a negative effect. The delicate mechanisms of the human body do not appear to be susceptible to steady high speeds, but they react to accelerations at much lower figures. This case arises often during flight, when every turn is an angular acceleration. It has been established that the maximum speed that the human body can stand during an average sharp turn is about 300 miles per hour. The present speed record for flight in a straight line is an average 408.8 miles an hour, although speeds up to 415.2 miles an hour for short periods have been recorded.

#### Constitutional Tendencies in the Orient

At a time when a bold experiment in the method of governing India is to be made and the details of the new federal constitution are being elaborated, a thoughtful paper by Sir Arnold Wilson, in the *English Review* for May, on the relative merits of government by means of an executive responsible to an elected body and by bureaucratic methods, should be read. As is well known, the application of the democratic principle to Eastern conditions is by no means new. It has already been attempted, not only in the management of local affairs in India itself, but also in a wider field in other countries, such as Turkey, Egypt, Persia, Iraq, Cyprus, Ceylon, and the Dutch East Indies. The results so far obtained are described in detail in the paper under review. They make very melancholy reading. In these very different localities, the introduction of the electoral principle has almost without exception either ended in complete failure or has been disappointing. On the other hand, in the overseas possessions of France and Italy, where the system adopted is a benevolent autocracy, the people are said to be contented and there is little or no unrest of the type now so common throughout India.

#### The Indian Problem

IT is difficult to resist the conclusion that had the Indian problem been approached at the very outset by the methods familiar to the man of science, one of