

yet available to the public, and when they are produced they will cost £30-£100 each. Both the German Post Office and the Broadcasting Company are, however, eager to provide the public with means whereby they can form an opinion of the entertainment value of the new service. Accordingly, the Post Office has opened a televiewing room in Berlin where reception is demonstrated every morning. Also, in co-operation with the German Listeners' Association, four similar rooms have been opened in other parts of the city where the public can witness the reception of the evening programmes. No charge is made for admittance, although to prevent undue crowding, tickets are issued and the attendance of each person is limited to half an hour. Thus during an evening programme of one hour and a half, three groups of 40-50 persons can have a demonstration at each centre. It is intended to extend these free facilities so that television, even in its present stage, will not be limited to the small group of persons who are financially in a position to buy apparatus.

Visibility Distance of Pedestrians

TESTS were carried out last year by the Massachusetts Highway Accident Survey with the object of finding out by actual experiment the distance at which the driver of a motor vehicle can see a pedestrian who is walking along the side of a highway at night. The tests are analysed and discussed in a paper by P. Moon and R. C. Warring (*J. Franklin Inst.*, March). The principal conclusions arrived at are that the visibility of a pedestrian walking along a highway at night is increased by roughly 50 per cent by showing a small area of white such as a handkerchief. Three reflector buttons, such as those employed in reflecting type highway signs, worn with dark clothing increase the visibility distance by 100 per cent, the same as that produced by a large area of white. It was found that the maximum safe speed at night was approximately 30 m.p.h., but if there was no glare from passing cars it was 40 m.p.h. These speeds are the optimum values. The time lag of the driver seems to vary between 0.5 sec. and 1 sec. even when the surprise element is lacking. On unlighted roads the type of the pavement and the speed of the car have little effect on the visibility distance. The tests show that it is advisable not to have the candle-power of the headlamps less than 32. Experience shows that depressing the headlamp beams so as to diminish glare reduces the visibility distance. Another important conclusion is that highway lighting does not increase visibility distance unless the average luminosity of the pavement is above the chromatic threshold, which is generally taken to be of the order 0.05 lumen per square foot.

The *Camionale* Genoa-Serravalle for Lorry Traffic

THE handling of the large import and export traffic of Genoa is a problem that has been studied by many Italian Governments. A satisfactory solution has now been found. A full description of the first section of the new motor road for heavy lorries (*camions*) called the *Camionale* is published in

Engineering of June 28. The electrification of the railway from Genoa to Roneo over the Giovi mountain range in 1916 increased the capacity of the line more than four times. When this proved insufficient, a more direct electric railway was projected between Genoa and Arquata, necessitating the construction of a tunnel ten miles long through the Giovi mountains. The development of motor road transport and the success of the *autostrada* connecting Milan and Como, Naples and Pompeii, etc., created a new situation. The *autostrada* are characterised by the absence of practically all crossings and have minimum gradients and curves of long radius. No pedestrians are allowed on them. The new motor road, or *Camionale*, will ultimately join Genoa with Milan and Turin, and the projected electric railway has been abandoned. The *Camionale* starts from a large square near the Port of Genoa and traverses the Promontorio and Belvedere Hills by means of two long tunnels. After passing through many further tunnels, the road passes over the Montanesi torrent by means of a picturesque viaduct. In the Littorio tunnel, 2,926 ft. in length, the road reaches its highest altitude, 1,255 ft. above sea-level, at a distance of 13 miles from the terminal square at Genoa. The terminus at Serravalle Scrivia is 31 miles distant from Genoa. The geological conditions made the construction of the *Camionale* very difficult. The width of the road is 10 metres (32 ft. 10 in.). The total cost of construction of the *Camionale* is about 3½ million sterling at the present rate of exchange.

Australian Institute of Agricultural Science

IN January 1935 the Australian Institute of Agricultural Science was inaugurated, with Prof. A. E. V. Richardson, of the Waite Institute, as its first president. The presidential message states that "the major work of the Institute will be the development of an *esprit de corps* among the members of the profession throughout the Commonwealth, and in assisting in the formation of a public opinion which will insist that the agricultural and pastoral resources of Australia should be developed by the best known methods and utilised to the best advantage attainable". The constitution provides for periodical meetings of the Institute and its local branches, and also for the publication of a journal of which the first number has now appeared (vol. 1, No. 1, March 1935). It is intended that this journal shall be devoted to the publication of leading articles, reviews of present states of knowledge, research papers, technical notes and other items of a professional and general nature. The current number gives some indication of the wide field of interests it is proposed to cover. Contributed articles deal with agricultural science in the Soviet Union, and with rural relief and agricultural extension. The economic side is catered for by an article dealing with commerce and agricultural research and also by abstracts of a discussion on "Plant Quarantine" at the Melbourne meeting of the Australian and New Zealand Association for the Advancement of Science. The technical notes deal with various problems in agricultural plant physiology, entomology and pathology, while a column of

personal notes will help to keep the members of the Institute in touch with one another. If the present programme is continued, both the Institute and the *Journal* should help to fill the need that has long been felt for an organisation, commonwealth in scope, through which the views of the agricultural profession can be expressed.

Monographs of Physiology

THE rapid advance in our knowledge in every branch of scientific inquiry makes it difficult or impossible for investigators to follow the work which is being carried out in other fields than their own in any great detail. Even in their own particular sphere, they must rely for their knowledge of the literature to a certain extent upon the abstract and review journals. For this reason, we welcome the short monographs on different subjects which are now being published in Paris: the earlier series dealt with problems of physics and physical chemistry, but during the past year various monographs on physiological questions have been issued (*Actualités Scientifiques et Industrielles*. Nos. 113, 135 and 136, 178 and 179, 1934. Paris: Hermann et Cie). No. 113 in the series, by T. Cahn and J. Houget, gives a short account of the biochemistry of muscular contraction. The four chapters deal with the chemical changes occurring in a muscle extract, in an isolated muscle and in the intact animal during muscular work: the fourth summarises our knowledge. There are no references. Nos. 135 and 136, by Z. M. Bacq, give short accounts of sympathicomimetic substances and of the hormones and vitamins: bibliographies are included. The first gives a brief account of substances which produce the same, or similar, effects in the body as stimulation of the true sympathetic nerves, and discusses their mode of action. The second reviews briefly our present knowledge of the hormones and vitamins, especially from the point of view of the minuteness of the quantity which is active in the body. Nos. 178 and 179, by F. Kayser, deal with the biochemistry and physiology of creatine and creatinine, including their metabolism in health and disease. The subject is treated more fully than in the other monographs and the bibliography occupies about one third of each volume. Each gives an excellent review of our present knowledge of the functions of these compounds in the body, and is worth perusal by those interested.

University Degrees in Engineering

THE series of articles in the *Engineer* on "University Degrees in Engineering", to which we directed attention some time ago, have now been republished as a booklet (London: Morgan Brothers (Publishers), Ltd., 1s.). The author of the articles is Dr. T. W. Chalmers, and the survey has been prepared from information contained in official publications of the nineteen universities of Great Britain and Ireland. The survey does not pretend to cover all the essential features of the regulations, and matters connected with matriculation and entrance examinations have been excluded. The booklet should prove of use to everyone interested in engineering education.

Rabies in South Africa

IN the *Onderstepoort Journal of Veterinary Science and Animal Industry* for October 1934 (3, No. 2, p. 335), attention is directed to the increase in South Africa in the incidence of rabies in 1933 over 1932. The disease occurs, and appears to be spreading, among the small wild carnivora (*Viverridae*). The disease was definitely proved in twenty animals, and in addition nine calves and three cows almost certainly died from it. There were six cases in man, transmitted once by a dog, twice by the domestic cat, once by a wild cat, and twice by the yellow mongoose (*Cynictis*).

The Case for Vivisection

AN article with this title, by a 'layman', Mr. J. Alderson, appears in the Research Defence Society's journal the *Fight against Disease* (No. 2, 1935). The author points out that experiments on animals in Great Britain are rigorously controlled by Act of Parliament; but it is his conviction that were there no such Act, vivisection would be carried out just as humanely as it is now, for a love of animals and abhorrence of wilful cruelty are as evident among medical men as among other citizens. He concludes by stating that he feels he must support and defend the work on account of the discoveries made through experiments on animals, and that whenever relevant information can be so obtained, it is our duty to encourage and support it.

Nutrition Research at the Mellon Institute

DURING 1934, Dr. Gerald J. Cox and Miss Mary L. Dodds, working on a fellowship at Mellon Institute of Industrial Research, investigated fundamental causes of tooth decay. Their work suggested the existence of a factor which, if present in the diet during a critical period of tooth formation, will aid in the construction of teeth resistant to decay. This research is to be continued, along broad lines, through a grant for a period of one year from the Buhl Foundation of Pittsburgh. The investigation, which will be known as the Institute's multiple fellowship on nutrition, will be carried on by Dr. Cox as senior fellow, Miss Dodds as the junior incumbent, and W. E. Walker as the assistant, in the Department of Research in Pure Chemistry of the Institute. It is planned first to determine definitely whether or not this factor actually exists, and, if so, its nature, properties, distribution and extraction. Secondly, studies will be made of physiological processes which are likely to influence the development of dental caries.

Award for Research in Fruit Growing

IN 1920 Miss L. Jones-Bateman of Cae Glas, Abergele, presented to the Royal Horticultural Society a valuable silver-gilt replica of the Warwick Vase, to be used for the encouragement of fruit production. It has accordingly been decided to offer it triennially for researches in the growing of hardy fruits, figs, grapes and peaches in the open or under glass, and it is available for award in 1935. Candidates