

that is, in the morning. A general survey of meteorological conditions over the hunting season undoubtedly resulted in better sport, scenting conditions being predicted with fair accuracy for particular days. It is suggested that, from a study of the meteorological elements in relation to scent, a Master of Hounds will be able to frame suitable questions, the replies to which will give him a good idea how he can benefit by the information.

Micro-Climatology

A NEW quarterly journal entitled *Bioklimatische Beiblätter der Meteorologischen Zeitschrift* made its appearance last year. It is a joint production of the German and Austrian Meteorological Societies, and is edited by Drs. W. Schmidt of Vienna and F. Linke of Frankfurt a. M. A specimen number (Band 1, Heft 3) has been received from Dr. Schmidt. It sets out to deal with observations made in such a way as to represent the climates actually experienced by various living organisms; in other words, to portray the so-called micro-climates. Micro-climatology is a comparatively new subject, and one which has a scope that is great in proportion as there are innumerable problems of a biological nature to which it has some application. Among the papers in this specimen copy is one by F. Steinhauser which is a good example of micro-climatology: it is a study of the special temperature conditions which the dwellers in large towns experience out of doors, conditions which are different from those prevailing in neighbouring open country, and which are of biological importance to the people concerned. Another paper, by W. Kühnelt, deals with the general significance of climate for the animal kingdom. These are both largely surveys of work done by those engaged on those special questions; in another, by Dr. Linke, one of the editors, a brief survey is given of the pioneer work of W. F. Tyler on the psychological effects of various degrees of relative humidity combined with high temperature, founded on studies made in Shanghai, from which Tyler drew lines of equal discomfort termed 'hythers' on a temperature and relative humidity diagram.

Chemical Industry in the United States

THREE hundred years ago, there was established in Boston "a strange combination of druggist's shop, metallurgist's workroom, chemist's laboratory, and alchemist's den" which may fairly claim to have given birth to the American chemical industry. It was the enterprise of John Winthrop the younger, who at the age of twenty-five years had gone from Suffolk to Massachusetts as assistant to his father, an important Puritan leader, and governor of the Company of the Massachusetts Bay. Becoming Governor of Connecticut for a time, the son later returned to England and renewed contacts with British men of science, returning afterwards to America and resuming his public service. His medicinal prescriptions became famous; he mined for lead, tin and copper; he manufactured salt, glass and iron; he produced potash, saltpetre, alum,

wood pitch and tar, and indigo; he built up the first scientific library in America; and he promoted the first American chemical stock company. In celebration of the tercentenary, the American journal *Chemical Industries* has published a supplement entitled "Chemical Industry's Contribution to the Nation: 1635-1935", a pleasantly presented and lavishly illustrated issue of 176 pages, which surveys the progress of chemical industry in the United States and includes a list of important commercial chemicals manufactured in that country. The chapter describing the *raison d'être* and public service of the Chemical Foundation opens with the following statement: "The establishment of a self-contained synthetic organic chemical industry in the United States is the only thing of substantial value which we got out of the war. Its establishment meant more to the American people than reparations or territory. . . . The value of this industry to the American people is inestimable."

International Broadcasting Union

ACCORDING to a report in *World Radio* for July 5, the International Broadcasting Union concluded its annual meeting on June 26, at Warsaw. Representatives of broadcasting organisations in twenty European States and in the United States of America were present. It was stated during the course of the session that the potential audience of listeners at the beginning of June has reached at least 200 millions. Among the more important business of the conference was the decision to organise a limited number of international programmes each year, in the form of discourses in which direct contact will be established between the greatest contemporary leaders in science and art, and listeners in the various countries of the Union. The progress in technical precision in broadcasting stations in recent years is illustrated by the results obtained at the Union's central observation laboratory in Brussels. Whereas ten years ago stations were known to fluctuate a few thousand cycles per second from their normal frequency during the course of a few hours, to-day the principal European stations do not fluctuate more than one or two cycles in a month from their established frequency, which in many cases is of the order of one million cycles per second. This meeting formally marked the conclusion of the first ten years of the Union's activities; and it witnessed also the passing from the office of president of Vice-Admiral Sir Charles Carpendale (a controller of the B.B.C.) who has been president of the Union since its foundation. Very warm tributes were paid to Sir Charles for his services in the cause of international broadcasting. The new president of the Union is M. Maurice Rambert, administrateur-délégué of the Société Suisse de Radiodiffusion.

Television in Germany

THE Berlin correspondent of *World Radio* states that although the German Broadcasting Company inaugurated its experimental high-definition television service on March 22 last, suitable receivers are not

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