

Forestry Research

THE Forest Products Research Laboratory at Princes Risborough has begun a new issue entitled *Forest Products Research Records*, of which Nos. 1 and 2 have been issued (H.M. Stationery Office, 1935). No. 1 deals with the testing of timbers at the Forest Products Research Laboratory, and describes in clear language the *raison d'être* for the Laboratory and the objects at which it aims. It is pointed out that the object underlying the work of investigating the properties of timbers, the practical application of the results of the tests and their importance to the timber-using professions and industries as well as to timber merchants, are not fully understood. Nor are the facilities offered by the Laboratory for supplying information fully realised. It is the object of the *Records* to supply this want. The first number describes the work of the different sections of the Laboratory under the headings: structure, timber physics, seasoning, timber mechanics, woodworking and preservation, with sections dealing with entomology, mycology, wood chemistry and utilisation.

IN the second number of the *Forest Products Research Records* the subject of "The Strength Tests of Structural Timbers" is discussed. Both Canada and the United States have been engaged upon research work in this direction for a number of years. Until recently the subject has received very little attention in Europe, which accounts perhaps for the fact that handbooks providing tables do not agree among themselves owing to important factors being overlooked by earlier investigators. For example, mention is made of one record which cites Memel redwood as 60 per cent and English oak as 20 per cent stiffer than greenheart, whereas it has now been established that redwood and oak are approximately equal in this property and no more than half as stiff as greenheart. With the object of coming into line with the Canadian and American research work, an extensive programme of tests was commenced some time ago at Princes Risborough. Work was started in testing redwood from the White Sea and from Geflé. The Timber Trade Federation became interested in the work, and with its co-operation the scope was considerably extended. The results of the tests on redwood from those two areas are detailed in the *Record*.

New Box Testing Laboratory

THE Department of Scientific and Industrial Research has set up equipment at the Forest Products Research Laboratory for testing packing-cases, boxes, etc., under stresses similar to those encountered during rail or road transport. The installation is the first of its kind in Great Britain, but several are in use in the United States, where the experience gained has considerably reduced the claims for damages paid by the railways. The plant at Princes Risborough tests both the endurance and strength of the boxes. For the former test, the cases are placed inside a large rotating drum, which revolves twice a minute, wooden baffles on the inner face causing the article

to fall in different positions in turn. A moderately well-made container was found to collapse after about thirty falls, whereas one of really good design could withstand 150 or more falls. A 'dropping machine' tests the resistance to falls on the face, corner or edges at will, while in a further apparatus resistance to crushing can be determined. The efficiency of nailing, different types of fastenings and packings are also being investigated, and on behalf of the Ministry of Agriculture special tests are being made with the view of drawing up a standard specification for fibre-board containers for National Mark eggs. The Box Testing Laboratory will be available to manufacturers and others who wish to study possible improvements in methods of box construction and in the packing of contents to give the greatest protection. The scale of charges, and a statement of the conditions under which tests will be made, can be obtained from the Director, Forest Products Research Laboratory, Princes Risborough, Bucks.

Air-Conditioning in the Tropics

ATMOSPHERIC conditions in the tropics have serious effects, both physical and mental, upon the inhabitants. In an article in the *Electrical Review* of November 8, Prof. C. A. Middleton Smith of the University of Hong-Kong states that it is difficult for those who live in temperate regions to realise the depression produced on human energy by living for months in a climate with a night and day temperature of about 90° F. and a relative humidity of more than 90 per cent. With the help of electrical power and the new methods of producing cold mechanically, it is now possible to manufacture climatic conditions that are almost perfect. By the use of a small electrically driven machine in his private room in the University, Prof. Smith can make the climate in it as pleasant as on a summer day in England. Six hours after the machine has been at work, it has extracted a gallon and a half of water from the air in the room. The effect of the two contrasting atmospheric conditions within and outside the room upon bodily comfort is most marked, and he has found by experience that he can double his lecture hours and yet be less fatigued at the end of the day. He says that no educated person in the tropics who can afford an electrically driven refrigerator would now risk having a 'disease carrying' ice box. He has for the last sixteen years advocated air-conditioning in the tropics. One of the most extensive applications of the system in China to-day is that of the new million pound building of the Hong-Kong and Shanghai Bank. There are six air-conditioning plants for the whole building. Electric motors are used for driving the ammonia compressors. Three pumps are required for the condenser water circulation and there are six inlet fans which drive 229,000 cubic feet of air a minute. The total rating of the electric motors used is 800 horse-power.

Radio Research Laboratories Abroad

THE rapid and widespread growth of radio communication and its associated industries has been one of the most notable events during the past fifteen

years. The inception and development of broadcasting, and later of television, resulting from the earlier introduction of the thermionic valve to industry, have revolutionised the scope of normal commercial telegraphic and telephonic communication. These developments have naturally been accompanied by the establishment of radio frequency research laboratories in all parts of the world, some of these being controlled by government administration, while others are associated with private enterprise. The issue of *La Nature* of September 15 is devoted to an illustrated account of several such radio research laboratories. Much space is devoted to the work of the French institutions, Le Laboratoire National de Radio-Electricite, Le Laboratoire du Comite Consultatif, Les Laboratoires de Recherches du "Materiel Téléphonique", and to the private laboratories engaged on television. In addition, however, the work of the Heinrich Hertz Institute and of M. von Ardenne in Berlin are described briefly; while attention is also devoted to the Philips Laboratories at Eindhoven, the Bell Telephone Laboratories in New York, the Italian Television Laboratory and that of the Baird Television Laboratory, the only English laboratory mentioned. Further articles deal with work in France in connexion with broadcasting, valve manufacture and research on the interference problem. The whole issue presents an interesting summary of the scope and position of research in the institutions enumerated.

Solar Physics Observatory, Cambridge

IN his twenty-third annual report to the Solar Physics Committee the Director of the Solar Physics Observatory, Cambridge, is able to point to a number of interesting results obtained from a particularly active year. To begin with, the 3-ft. Common mirror has been refigured by Dr. Burch, who has developed a special new method of testing paraboloids in this connexion. The performance of the mirror is greatly improved, and it is hoped to improve the 10-in. secondary mirror used with this large mirror and so obtain really good definition with the 3-ft. telescope. The year's work on stellar spectroscopy has been notable on account of special observations made during the eclipse of ζ Aurigæ and for the work on Nova Herculis. A very special effort was made, and altogether 284 spectra were secured on 137 nights between December 13, 1934, and July 31, 1935. This is a very fine performance for the climate of Great Britain, and was only made possible by enthusiastic team work by the staff and research workers at the Observatory. An item of interest is the attempt made by Drs. Redman and Bullard to determine the diameter of Antares by observing the brightness during an occultation by the moon. Unfortunately, the apparatus broke down at a critical point in the observation, but there appears to be nothing unworkable in the method, which is of extreme interest, and it is to be hoped that the experiment will be repeated at the next favourable occultation. The solar work has continued, perhaps the most noteworthy item being the accurate determination of the central intensity of the line at

4227 Å. (due to Ca^+) by Dr. Redman, the result being 2 per cent—possibly the lowest central intensity yet accurately measured. The Observatory has arranged to send an expedition to observe the total solar eclipse of June 19, 1936, the site chosen being in the island of Hokkaido. Finally, the work on meteorological physics has been continued, and the work on the Fe^+ laboratory spectrum has been brought to a successful conclusion, 58 new multiple terms and 157 levels having been determined.

Archæology in South-East Essex

LOCAL archæologies and local histories have a useful function which is seldom fulfilled satisfactorily. To write them successfully requires a nice perception of the balance between the foreground of local interest and the background of the general trend of history or cultural development. Of the importance of the detailed record of local finds there can, however, be no two opinions. The studies of East Anglian archæology which we owe to Sir Cyril Fox have demonstrated the almost kaleidoscopic changes in the generalised picture as the records of local finds are brought more and more into focus. An excellent example of a method of treatment of local antiquities, which may be followed to advantage, is afforded by "The Archæology of Rochford Hundred and South-East Essex" by Mr. William Pollitt (Southend-on-Sea Museum, Handbook No. 7, pp. 59 with 22 plates, 6d.), in which the author follows up a survey of the archæology of the district from pre-palæolithic down to and including Saxon times with a detailed list of the 'finds' in the area, classified according to period and arranged under parishes, the present location of each specimen being noted where known. The distinction to be drawn between south-east Essex and the central and north-western areas of the county on geographical lines is no less apparent in its archæology. For this reason, if for no other, the general background becomes of no little importance for the appreciation of the significance of the finds. Here, it will be found, fully adequate provision has been made for the needs of those who will use the handbook. A map, or series of maps, showing the localities in which the antiquities were found, would have been a useful addition to the ample and excellent illustrations.

Shipbuilding by Welding

ELECTRIC-ARC welding has now arrived at the stage where it is recognised as an important aid to shipbuilding, and its field is being extended so rapidly that there are few shipbuilders or repairers who do not now avail themselves of its use. With this statement, Messrs. N. M. Hunter, vice-president, and H. W. Townshend, associate member, opened a paper read to the North-East Coast Institution of Engineers and Shipbuilders on November 15. They deal with the subject descriptively, and explain the methods used in the fabrication of various parts of the hull structure. The amount of work now done by welding and the marked advantages gained in some instances testify to its growing importance. Welding the steel decks has, for example, produced