

**British Rainfall, 1935:**

the Seventy-fifth Annual Volume of the British Rainfall Organization. Report on the Distribution of Rain in Space and Time over the British Isles during the Year 1935 as recorded by over 5,500 Observers in Great Britain and Ireland. (Air Ministry: Meteorological Office. M.O. 395.) Pp. xvi+285. (London: H.M. Stationery Office, 1936.) 15s. net.

THIS detailed account of the rainfall of 1935, based on returns from more than 5,500 co-operating observers, is the seventy-fifth annual issue of the series begun in 1861 by G. J. Symons, founder of the British Rainfall Organization. Like its predecessors in the series, the present volume includes maps, tables and descriptive matter dealing with the distribution of the rainfall each month and for the whole year, studies of heavy falls on individual days of particular interest and data in regard to rainfall duration, evaporation and spells of dry or wet weather.

The statistics show that the year's rainfall was about normal in Ireland; in other regions there was an excess averaging thirteen per cent over England and Wales, eight per cent over Scotland and nine per cent over the British Isles as a whole. During October, 22.92 inches fell at Inverary Castle, Argyllshire, and on February 15 a fall of 6.16 inches was measured at New Dungeon Ghyll Hotel, Westmorland. On the other hand, both March and July gave exceptionally low totals in certain areas.

The issue contains two special articles; one of these gives details of the remarkable hail-storm which occurred in the early morning hours of September 22 over Northamptonshire, probably the most destructive hail-storm that has occurred for many years in the British Isles. The other article, by the Superintendent, deals with the frequency of occurrence of heavy falls in short periods. An analysis of ten years autographic records leads to a new empirical formula connecting the rainfall amount, the time of fall and the frequency. On the basis of this formula, the curves used for defining "noteworthy", "remarkable" and "very rare" falls have been drastically revised. It is also suggested that data computed from the formula should form the basis of sewer and drainage works design.

**Tools of To-morrow**

By J. N. Leonard. Pp. vii+303. (London: George Routledge and Sons, Ltd., 1935.) Cheap edition, 5s. net.

IT is a truism that military leadership has seldom foreseen the conditions under which the next war would be fought, and has tended rather to plan its strategy and tactics in accordance with the experience of previous decades. The rate of impact of science on society is now increasing, or rather the period of industrial gestation is decreasing so rapidly that over whole spheres of our industrial and social life a like condition tends to prevail. Mr. Leonard could well have anticipated for this book the title of Sir Josiah Stamp's presidential address at Blackpool to the British Association. He is concerned with the

impact of science upon society and with the means of adaptation and change which science has put into our hands. The book, which is admirably written, can be commended to all who seek to form an intelligent opinion on social and technical change and the numerous grave problems arising out of them. While avoiding the sensationalism of many journalistic efforts in this field, it is lucid and always stimulating and well deserves a wide circle of readers. It is unfortunate, however, that Mr. Leonard should give fresh circulation to the mistaken belief that war stimulates development, more particularly as in one of the examples cited by him, namely, aviation, war needs have been the main factor responsible for warping its whole development.

**Electrical Laboratory Experiments—Theory and Practice:**

being an Abridgement of "Experimental Electrical Engineering". By Prof. Vladimir Karapetoff. Arranged and Revised by Prof. Boyd C. Dennison. Pp. xii+487. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1936.) 20s. net.

KARAPETOFF's text on experimental electrical engineering had become so comprehensive that it became desirable for the production of the present abridgement for undergraduate purposes, but even so the number of experiments described—and these cover the 'heavy' or machine side only—are so varied and numerous that a normal undergraduate could expect to cover a fraction only. After all, it cannot be necessary that a student be taken through all the experiences possible; apart from training his hands, the purpose of laboratory work should be to give him faith in the theory that he obtains from books and lectures, supplemented by exercises, and he should be taught to depend on what he learns. Nevertheless, the present text would be invaluable in designing or improving laboratory courses. L. E. C. H.

**Magic Squares of  $(2n + 1)^2$  Cells**

Avec sommaire: Les carrés magiques impairs. By M.-J. van Driel. Pp. 90. (London: Rider and Co., 1936.) 10s. 6d. net.

THE author of this volume has evidently devoted much research to the interesting study of magic squares, and though many results of his work were published in Amsterdam in 1931, it is pointed out that this book is not a mere translation of that work. New methods of composing magic squares of order 5 are given and, by a development of the uniform step method, constructions for squares of an order greater than 5 are deduced. Original practical rules are then enunciated for simple and pandiagonal squares of order  $2n + 1$ . Symmetrical and bordered squares are also considered.

The text is not easy to follow, although it contains much valuable information based upon sound mathematical principles and substantiated by many references to original work on the subject. The book concludes with a summary which is written in French.