to deal with the pests? An appeal in the daily Press has brought us inquiries as to the formation of clubs from Newcastle, Darlington, Blackburn, Walsall, Burton, Hull, Grimsby, Birmingham, Shrewsbury, and Bristol, whilst in the Manchester district such a club is already in being. We should be very glad to put any of your readers in touch with the local men in these districts, or to aid others to form similar clubs. Everything we can do to forward the destruction and thinning out of rats all over the United Kingdom we shall be only too happy to do.

WALTER HUTTON, Hon. Sec.

81, Clarkehouse Road, Sheffield.

THE PROGRESS OF RADIOTELEGRAPHY.¹

THE volume opens with an interesting *résumé* by Prof. Ferdinand Braun of his contributions to wireless telegraphy, the paper being, in fact, a Nobel lecture delivered in Stockholm in December, 1909. The first question of importance which the author touches on is the invention of the transmitter with coupled circuits, *i.e.* the use of a primary with large capacity to excite the aerial by induction instead of charging the aerial directly as was done by Marconi at that date. Prof. Braun's historical notes are interesting in connection with recent litigation in this country. Among other researches which he describes, the most important are probably those on directive telegraphy. He ends with a quotation from his first lecture in 1900:—

Wireless telegraphy has so far been called spark-telegraphy, and no doubt it has hitherto been impossible to avoid having a spark in some part of the apparatus . . . what I have attempted to attain is, however, what one might call sparkless telegraphy.

The first number also contains papers by Prof. J. H. Nicholson, P. Barreca, and H. Rau. The substance of Nicholson's paper has already been published in English. In Barreca's paper we have a description of a method of measuring the radiation from an antenna and instances of the application of Barkhausen's method of using a Braun's oscillograph for the determination of the power in a high-frequency current circuit. The chief result is a measurement of the sum of the ohmic resistance and radiating power of a particular station, and a proof that for geometrically similar antennas the non-ohmic part remains constant.

H. Rau gives interesting photographic records of the primary and secondary discharges in ordinary spark telegraphy and in shock excitation. In the practical section of this number the greater part of the space is given to descriptions, in considerable detail, of the new Telefunken system and recent Marconi apparatus.

Among papers throughout the volume on the transmission of electrical waves over the earth's surface are those by Somerfeld, Epstein, Schmidt, and Uller. Somerfeld's paper is one of the most important that has hitherto been published on this subject. The whole question of the effects of different characters of earth surface in the propagation of electrical waves is very thoroughly

discussed, among other things the question of surface waves and waves in free space being satisfactorily worked out.

Epstein contributes a method for determining the actual lines of force propagated over various soils, with diagrams showing their forms in several cases; while Schmidt deals with experimental measurements of the resistance of seawater in the North Sea, and Uller extends these to the Baltic, giving conductivities in terms of a formula in which the variable is the concentration of sodium chloride.

The volume contains a number of interesting articles by Nesper and others on detectors, and there are numerous papers on methods of measurement by various authors. The papers dealing with the production of high-frequency current are mainly concerned with the shock-excitation method, with the notable exception of those dealing with Goldschmidt's alternator.

In addition to Rau's article, mentioned above, there is a paper by Max Wien on shock-excitation with quenching tubes, *i.e.* vacuum tubes in series with the spark-gap in the primary, or shock, circuit. The result is an increase of primary damping and of efficiency. Nesper discusses the employment of shock-excitation for wireless telephony, and particularly the advantages of a controlled exciter giving a uniform spark rate over an irregular discharge. A paper by Eccles and Makower on the efficiency of quenched spark methods and a number of smaller articles complete the contributions on this subject.

Goldschmidt gives an exceedingly interesting description of his remarkable high-frequency alternator, and Rausch discusses it from the mathematical point of view.

There are a number of articles on a subject which has recently been very rapidly developed in practice, *viz.*, the transmission of musical tones and methods of acoustic tuning for the improvement of selectivity. Abstracts of patent specifications, reviews, and notes on practical problems are also included, and the whole volume forms an excellent review of the year's progress in technical matters.

In quality and arrangement of the matter, as well as in printing and illustration, the "Jahrbuch" attains a very high standard. The only criticism which suggests itself is whether its utility and circulation would not be considerably increased if space could be found for more articles dealing with the engineering and even the commercial side of wireless telegraphy. At present the contents are largely academic in character, and are mainly theoretical and experimental investigations into first principles rather than discussions of actual problems and what has been accomplished towards their solution. A certain number of engineering notes are given, and it is the amplification of this section that appears advisable to the present writer, so that it may include not only descriptive matter, but also discussions of the problems occurring in everyday engineering practice.

J. ERSKINE-MURRAY.

¹ "Jahrbuch der drahtlosen Telegraphie und Telephonie." Unter besonderer Mitwirkung von Prof. Dr. J. Zenneck. Herausgegeben von Dr. G. Eichhorn. Band 4, Heft 1-6. Pp. 664. (Leipzig: J. A. Barth, 1910-11.) Price 20 marks.