

Wireless Telephone Receiving Sets.

A NUMBER of patterns of complete wireless telephone receiving sets are being introduced to meet the requirements of the popular broadcasting services which will shortly be put in operation. It is regrettable that there has been a tendency, in striving after simplicity and cheapness, to cut the apparatus down to rather fine limits, resulting in the elimination of adjustments and features which are most desirable for really satisfactory working. Indeed many of the sets being advertised are little better than toys. It is true that reception of a sort is quite possible with elementary crystal sets, but the unskilled user will undoubtedly be better served by the slightly more expensive valve apparatus which is now being made in simple and convenient forms.

We have had the opportunity of inspecting an equipment supplied by the firm of Radio Supplies (236 High Holborn, W.C.1) which is typical of a good class of apparatus of this sort. This firm's M type set, which is sufficient for all ordinary reception, is of the two-valve pattern, one valve acting as detector and the other as amplifier, the latter being in the low-frequency circuit, forming what is termed a note-amplifier. The valves with their filament rheostats, switches, terminals, etc., are mounted on a compact case, but the aerial inductance is carried on a separate stand. In this the convenient arrangement is adapted of obtaining a variable coupling by turning a simple milled head, which alters the relative angular position of the coils in question. Alternative coils, which

can easily be plugged into place on the swinging arm, are used for different "bands" of wave-lengths. The fine tuning adjustment is obtained by a very compactly arranged variable condenser, and by this means the apparatus can be tuned to any wave-length from 180 to 30,000 metres.

With the pattern of valve employed a six-volt accumulator is generally used for the filament circuits, and it is recommended that this be of the 60 ampere-hour size, if the apparatus is in daily use for long periods, as then it will not have to be charged more than about once a week. It is, of course, possible in places where there are absolutely no facilities for recharging accumulator cells, to use large dry cells for the filaments. The high-voltage or anode circuits of the valves are supplied by compact multicell dry batteries at voltages from 30 to 70 volts according to circumstances. These are made up in blocks about 8 inches long of 30 cells each, and in view of the very small current taken from them, should last nine months without renewal.

A set of this kind, which complete with a small aerial and every accessory would cost from 25*l.* to 30*l.*, will pick up in addition to telephony, spark, tonic train, or continuous wave signals. Even with an indoor "aerial," the concerts from the Hague are audible all over the room, with an ordinary telephone receiver. The firm also supply larger sets with further degrees of amplification, but for all ordinary work two valves are quite sufficient.

Obituary.

PROF. A. LAVERAN, FOR. MEM., R.S.

FRANCE lost one of her great men of science when Charles Louis Alfonse Laveran died on May 18 at the ripe age of seventy-six. His death, following so closely on that of Sir Patrick Manson, may be said to close one chapter in the history of malaria, the important preliminary chapter which paved the way for the brilliant and far-reaching researches of Ross and the Italian observers.

Laveran was born at Paris on June 18, 1845, his father, a military surgeon, being a professor at the school of Val-de-Grâce. The son followed in his father's footsteps, for, after completing his studies in Paris, he decided to become an army doctor, and matriculated as a medical student at Strasbourg. He graduated in 1867, submitting a thesis on the regeneration of nerves. In 1874 he joined the staff of the Val-de-Grâce School of Military Medicine, and in 1878 was sent to Algeria, where he remained till 1883. It was in this country, at Bône and at Constantine, that he turned his attention to malaria, and carried out the memorable work with which his name will for ever be associated.

As a result of his labours Laveran was appointed, in 1884, professor of military hygiene and clinical medicine at Val-de-Grâce, posts which he held for ten years. Thereafter, for a short space, he was concerned

with administrative medical and sanitary work at Lille and at Nantes, but his heart was given to scientific pursuits, and, desirous of continuing his researches, more especially in protozoology, he relinquished his appointments in 1897, and retired with the rank of *médecin principal* of the first class.

Laveran then entered the Pasteur Institute where he soon became a professor. There he remained for the rest of his life, always busy, a tireless investigator who never flagged until age and infirmities conquered even his indomitable spirit, and he was no longer able to use his beloved microscope and pursue those studies to which he had devoted his life to such good purpose. As Prof. Brumpt pointed out in his address to the Academy of Medicine, a failure in Laveran's powers was noticeable after the fêtes in connection with the centenary of that Institution in which he took an active part. The effort exhausted him, and he no longer attended the meetings of scientific societies with his wonted regularity, a sure sign in his case of the approaching end.

Laveran's greatest work, and that which entitles him to a place in the medical Valhalla, was his discovery of the parasite of malaria. In Algiers he commenced his studies on the pathology of that disease, and his attention was specially directed to the characteristic pigmentation of the liver and brain in fatal cases. This had already been recognised, but it was

Laveran who demonstrated pigment granules in certain bodies exhibiting amœboid movements in the blood. These bodies were crescentic or spherical in shape, and he looked upon them as of a parasitic nature, though it was not until 1880, when at Constantine, that all doubts were swept from his mind by his discovery of the phenomenon known as "flagellation of the male crescent." So remarkable were the appearances presented that he no longer hesitated to declare his belief.

As is always the way in this conservative world when something new and strange is revealed, there was much scepticism as to the validity of his findings, but Laveran, who possessed most of the qualities of the successful investigator, was not to be daunted. By a series of careful observations, pathological, clinical, geographical, and therapeutic, he routed his opponents and eventually satisfied the scientific world that his conclusions were well founded.

Laveran shared the view which King advanced in 1883 that human malaria was a mosquito-borne disease, but he had no opportunity of testing the theory, which was finally established as a fact by Grassi, Bignami, and Bastianelli in Italy in 1897 after Ross had, in India, completed his epoch-making work on the transmission of bird malaria by culicines, and had seen the early stages of the development of the human malaria parasite in anophelines.

The Academy of Science set its seal on Laveran's discovery in 1889 and elected him a member in 1895. In 1893 he became a member of the Academy of Medicine, and he also joined the Society of Biology. It was not, however, until the true significance of his researches had been rendered apparent by the work which resulted from them that Laveran's claims to be in the first rank of living men of science were fully recognised. Then, indeed, he was paid the honour which was his due, and among many other distinctions was given the Nobel prize for medicine in 1907.

Together with some of his colleagues Laveran founded the Société de Pathologie Exotique, of which he was the first president, and during the dozen years of his chairmanship the society prospered greatly. In the *Bulletin* of the society many of Laveran's papers were published, and he did much to forward the cause of tropical medicine and hygiene throughout the French colonial possessions.

Laveran, like Manson, inspired others with his enthusiasm, and was an acknowledged leader in his own subjects. He wrote much on malaria, and collected his contributions in the well-known "*Traité de Paludisme*" in 1898, of which a second edition appeared in 1907.

His work at the Pasteur Institute was most prolific, and much of it was carried out in collaboration with Prof. Mesnil. Together they produced an important work on trypanosomes and trypanosomiasis, which reached a second edition, and was a mine of well-arranged information. Laveran was well qualified to write on the subject from the laboratory standpoint, for he conducted a great deal of experimental work on trypanosome infection, and tested many remedies with the view of finding a cure for sleeping sickness. Turning his attention to leishmaniasis, he published the first treatise on this subject, the study of which

led him to investigate many of the flagellate parasites of man and animals. The sporozoa of animals had earlier attracted his attention, and he investigated the properties of sarcocystine, the first toxin extracted from a sporozoon, and the pathogenicity of which was determined by Pfeiffer.

Considerations of space prevent any full account of Laveran's manifold activities. He was never idle, and no sooner was one piece of work completed than he was busy at another. His conclusions have not always been generally accepted, but he had ever the courage of his convictions, and adhered to his well-considered views with that tenacity which was so strong a feature of his character. In reality a kindly man, he was apt to be considered a trifle brusque by those who did not know him, especially if they trespassed overmuch on his working hours, but he was ever ready to aid the genuine inquirer and also to give credit where credit was due. He was precise and accurate in his work, careful in his writings, and possessed in a very high degree the scientific habit of mind, qualities which enabled him to stamp his personality on whatever he undertook, and will entitle him, for all time, to a foremost place in the ranks of those who have advanced the causes of parasitology and medicine in the tropics. A. B.

DR. J. RENÉ BENOÎT.

THE world of science has suffered a severe loss by the death at Dijon, on May 4, of Dr. J. René Benoît, honorary director of the Bureau International des Poids et Mesures, Sèvres. Dr. Benoît, who was born in 1844, commenced his scientific career in the study of medicine, but, having attained his doctorate, transferred his attention to pure physics, working first in Jamin's laboratory, where he prepared a thesis on the electrical conductivity of metals. After some years in industrial life he joined the Bureau International in 1878 as assistant director to Dr. O. J. Broch, whom he succeeded as director in 1889. It was at the Bureau International that his great work was achieved. His first investigations were related to the improvement of thermometric and barometric measurements, and were followed by very careful experiments directed to the measurement of thermal expansions, particularly with the Fizeau apparatus, which he greatly perfected, and which continued to hold his interest to the end of his career. Dr. Benoît took a large personal share in the work of verifying the principal series of prototype metres, and executed a number of very accurate comparisons of the International Metre with other current standards of length, including the British Imperial Yard and the ancient Toise du Pérou and Toise de Bessel, on which the original French metre and the geodesic measurements of central and western Europe had formerly been based.

In 1891 Prof. A. A. Michelson was invited by the Comité International to carry out at the Bureau his contemplated researches into the relation between the metre and the wave-length of light. Dr. Benoît threw himself enthusiastically into this work, and was closely associated with it throughout. Again in