

# The Growth and Work of the "B.B.C."

We are indebted to "The Dominion" for the following interesting article by Miss Nellie

M. Scanlan, on the British Broadcasting Corporation and its growth and work.



WHEN the B.B.C. (British Broadcasting Corporation) asked Bernard Shaw to speak on the wireless, and not say anything controversial, Bernard Shaw tossed his wintry beard and laughed. Whoever heard of a man saying anything worth while that was not controversial! There is a very rigid regulation about the English radio programme, that nothing controversial shall be said over the air. One may justly qualify that and state that this exclusion really applies to major controversial subjects, such as religion and politics. One would not fling heedlessly at England's ten million radio audience a discussion on birth control, prohibition, or the revised Prayer Book.

Almost any man who makes a statement on the air, about anything from the weather forecast to raising chickens, starts an argument in some household. Households are like that. They need only the theme; the will to controversy is always there.

## 2LO'S HEADQUARTERS.

ENGLAND'S radio headquarters are on Savoy Hill, behind the Savoy Hotel. Savoy activity, is now too small for the 500 or more people it employs. There are many departments in this army, with a general at the head of each group. I was passed from hand to hand, through a long line of generals, until, speaking of facts and figures, I had reached saturation point.

The mechanical side of wireless merely bewilders me. A tall, learned engineer led me through ranks of studios, where, amidst hangings and draperies, he explained the strange antics of "frequencies" if you don't watch them. He talked in scholarly fashion of real and artificial echoes, and I could see from the pride in his eye that the one he had manufactured in the next room, where the sound was taken by force, had its "frequencies" stripped and regulated, and an echo of perfect uniformity attached before being allowed to escape to the outside world, was his pet.

## IN THE STUDIOS.

WE looked through glass peepholes into occupied studios. A red light over the door enjoins silence, as it indicates that a performance is in progress. A blue light also denotes that the performance is a rehearsal. All programmes are carefully rehearsed.

In one studio a military band was blasting out a stirring tune. In the next the peephole revealed a Jewish soprano, in the throes of a top note, with a handful of orchestra holding tone in suspense, until she should condescend to vacate it. At last she did, then wriggled her torso as though to invite a return to normal of much displayed

muscle, while the conductor tossed a mane of tangled hair from his eyes. It looked as though it might have been a slab of grand opera.

In corridors we tripped over men with saxophones, and euphoniums, side drums, and double basses, and women—old and young, curled and soured, pert and frowsy, but all hopeful—waiting with a music case or a mandolin. And fragments of chatter reached the air, ariel talk all of it, about microphones and music, and how Masie sang last night.

## TEST FOR ASPIRING ARTISTS.

ONCE upon a time, anyone who had the stirrings of ambition, could have an audition at the B.B.C.

"Some of them were very short," said the Radio General with a smile. "We had to protect ourselves against such waste of time. Now all aspiring artists must fill in an application form, giving full particulars of their achievements, and experience, and, in the case of singers or musicians, the application must be countersigned by the teacher, or two well-known musicians.

An audition is then granted, one judge sitting in the room, and the other listening-in to hear how it comes over the air. If they pass this test, they may secure an engagement for morning programmes, and if they make good here, then promotion to the more popular evening concerts may follow.

The fees paid range so widely that it is impossible to strike an average, and as the B.B.C. include some of the best-known artists, very high prices are sometimes paid, but much of it is necessarily on a lower scale.

## PROGRAMMES IN THE MAKING.

AFTER much climbing of many stairs we come to an upper chamber, a clearing-house where all the programmes pass through. Here again, among mechanism that looked rather like a modern telephone exchange, I was attacked with much scientific data. I emerged from it with a definite admiration for the system that, on long distance transmissions can, four or five times, take the sounds which apparently lose in high frequencies, and gain in the lower, and equalise them at every station en route. They arrive out of proportion, as it were, and are instantly remodelled and sent forth on the next lap of their journey, perfect in tonal contour. It was all very wonderful.

England, as elsewhere, is not satisfied with its radio programmes.

"How in the world can you expect to satisfy ten million people," said one of the radio generals.

"There are 2,300,000 licensed wireless sets in England to-day, and I cannot say how many home-made affairs in the attic, with no license. But that is the job of the Post Office to run them to earth. Taken statistically, that gives

as a potential audience of ten millions. And the man who can design a programme to satisfy all these has not yet been born on this, the earth. We get about 80,000 letters annually, and what one applauds, another condemns. But we have our own professional critics, who regularly listen-in and report."

## EARLY DEVELOPMENT.

FIVE years ago the B.B.C. was a private company, the radio firms being the large shareholders. It ventured timidly out into an unknown world—a world of wireless wanderers. There was no precedent to guide it; it had to feel its way cautiously. Experimental stations and equipment, tentative methods, and programme, provisional restrictions, and regulations were necessarily part of its policy.

Just a year ago the B.B.C. became a corporation with the Royal charter. The Post Office still issues the licenses, tracks down the unlicensed, and does other odd jobs, for which it receives equivalent to about 25 per cent. or more of the license fees. As there are no shareholders, there are no dividends, the original shareholders in the company having been paid back, and the corporation runs on its earnings.

From license fees they receive something less than a million annually. But this is not their only source of income. The B.B.C. has developed a publishing branch. In the "Radio Times" is published the full alternative programmes for the week, with much detailed information about the artists and the productions. There is also a lot of reading matter relative to wireless from the mechanical side.

"We hope to make this a national weekly, from an editorial point of view," said the Radio General, "and not confine it entirely to wireless news."

## CHOICE OF FOREIGN PROGRAMMES.

"WORLD RADIO" is another publication, dealing with wireless at home and abroad, and giving the day and hour of every foreign programme. If you follow the "Radio World," and have a set strong enough, you may listen to the bedtime stories of an Uncle in Lithuania, "The Passing of Moya" in Dublin, a talk on "The Volga-German" from Austria, a symphony concert from Czechoslovakia, the prelude to Parsifal from Paris, weather from Switzerland, Divine service from Pittsburgh, while Schenectady will give you "The Stetson Parade," whatever that may be. A wide range of choice.

These two publications are proving very profitable, and their profits enable the B.B.C. to put into programmes a greater proportion of the license fees. But they are not content with this

alone. When copyright permits (and copyright is one of their big items), pamphlets containing the words of plays or operas are published and sold, for these greatly enhance the enjoyment of a radio performance. To sit by the fire, book in hand, and follow every word is a great assistance.

## AIDS TO INSTRUCTION.

REGULARLY French is taught over the wireless, and many people take this course. To supplement the instruction on the air, booklets containing each lesson are sold, so that eye and ear are trained simultaneously, and that great difficulty, pronunciation, is overcome.

Large numbers of the English schools now have radio installations. Series of lectures are given for school children, covering history, travel, geography, music, literature, and many other subjects. Booklets containing a synopsis of the lecture, prepared by the lecturer, and published by the B.B.C., are supplied to the schools free. This enables the scholars to check and correct statements not clearly understood or heard, and stimulates a further interest in the subject.

The B.B.C. nourishes the hope that one day the Government will recognise this educational service, and assist in the publication of the school pamphlets.

I think it was America who coined the phrase, "Make a little talk," for they have a perfect passion for lectures in the United States. England does not relish being lectured to such an extent, and the hours devoted to talking on the wireless have been the subject of a heated controversy.

## WHAT DO THE PUBLIC WANT?

RECENTLY the "Daily Mail" took a straw vote as to the public's opinion on the present wireless programmes. The result was in favour of more music and less talk.

"It would be difficult to say what is the most popular form of wireless entertainment," said the Radio General, "but light music—popular songs, small orchestras with the type of selections favoured in restaurants, and military bands—are probably the most in demand. Yet, of course, that can be overdone, as there is also a great demand for other phases. The talks, about which there is so much fuss at the moment, include comments on sporting events. That is a man describing a football match, boxing contest, or the boat race as it is in progress. There is also what we call the 'eye-witness account,' that is, the story of an event related afterwards by an eye-witness. The weather forecast, stock reports, day's news budget, topical events—all these come under the heading of talks, which, at most, occupy only 14 per cent. of the total programme."

Then we come back to the original question of whether these talks might not be widened to include more controversial subjects. On the Board of Control there is one woman, and a very able woman, Mrs. Phillip Snowden. A few weeks ago there was a suggestion that she might not be on the board for very long, despite the fact that it carries, I think, £800 a year salary. Mrs. Snowden has been actively engaged in fighting for more freedom of speech on the air, a wider interpretation of the non-controversial regulation.

"When Bernard Shaw spoke over the radio, of course he broke every rule and regulation in the matter," said the Radio General. "But we do not permit debates now on topical or abstract subjects, such as 'Is sport a menace?' or 'Is chivalry dead?' But always, we extract a pronouncement that is not controversial will be introduced."

## THE CONTROVERSIAL ASPECT.

CONTROVERSIAL, in the radio sense, is therefore hard to define. But Mrs. Snowden would favour using the air by the respective political party leaders and authoritative speakers, on questions of vital national importance, in order to ensure the real facts on all sides reaching the remotest people.

At the moment, this subject is under serious consideration. It contains wide possibilities for good or ill, and both must be weighed, but the Radio General would give me no hint of the possible decision.

The London station is 2LO, but there are a number of stations and relay stations throughout England. Daventry 5XX is really the same as 2LO, and what you hear from one you hear from the other. The perpetual argument about what the people want has led to the development of an alternative programme. So now they have built another station at Daventry, 5GB. It is hoped in time to duplicate every station, and so provide the whole of England with the alternative programmes. If you don't want to listen to bedtime stories on 2LO you can have your military band on 5GB, and if you are weary of the opera on 5GB you can switch on to the boxing report on 2LO.

When I asked if they welcomed every new development and improvement in wireless, the Radio General looked aghast. I felt they were praying for a period of stabilisation, in order to ensure a reasonable life to their present equipment.

"You can't scrap thousands of pounds worth of gear for every five per cent. improvement," he said.

Over the felt-covered desk, where the talks, nightly talks, was a notice. "If you sneeze or cough you will shatter the nerves of thousands of people." "A mild exaggeration?" I asked. The Radio General nodded.

## PROGRESS IN 1927

### AN AMERICAN REVIEW

(By Dr. Alfred N. Goldsmith, Chief Broadcast Engineer, Radio Corporation of America.)

There are some years in the development of radio which mark the end of one era and the beginning of another. Among these years has been 1927, for during this year certain basic tendencies have proved their importance in radio development, have been definitely accepted by the engineers and the public, and may now be expected to lead to continued further development along proved lines.

It is now recognised that the era of unregulated or only partially regulated radio transmission has come to an end. The passage of the Federal Radio Act of 1927, and the appointment of the Federal Radio Commission under the provisions of the law, have for the first time enabled the Governmental regulating powers to be exercised systematically in the direction of minimising interference between broadcasting stations and allocating frequencies to such stations based on a nationally applicable plan, and yet flexible toward local conditions. The excellent preliminary work of the Department of Commerce along these lines prior to the passage of the 1927 Radio Law has been utilised as a foundation by the Federal Radio Commission. One great contribution of the commission has been its consistent unwillingness to permit the erection and operation of unnecessary additional broadcasting stations in regions already adequately served.

The circumstances just mentioned have had a considerable influence on radio receiver design. Since it has become evident that an indefinite multiplication of stations will not be permitted, and that the congestion of stations in a given district will be greatly reduced and the field strengths corresponding to the various programme signals will be systematically increased, the designers of receiving sets have been enabled to produce generally useful but simple and compact receivers with greater assurance than heretofore. It is now reasonably certain that stations of considerable power having frequency allocations less than 50 kc. apart will not be erected within a given district; that the building of powerful stations in regions of high population density will be discouraged; and that stations giving a demonstrably valuable service to the public will be

afforded channels for clear reception up to the reasonable range of the station.

Concurrent with the use of transmitters having a power of several tens of kilowatts has been the inevitable improvement of radio reception in millions of homes. Signal field strengths capable of riding above local man made and atmospheric electrical disturbances have become so common in the more fortunate districts that the listeners have been definitely educated to regard such powerful and clear signals as normal. At the same time, the average listener naturally is dissatisfied with the feeble and mangled signal from distant stations, and, as a result, only those listeners who are compelled by their location to listen exclusively to distant stations constitute any considerable percentage of "long-distance searchers." This change in listener psychology, corresponding to a demand for loud and clear signals, and a refusal to listen to weak or mutilated signals, together with a considerable loss of interest in distant reception, has brought to the fore the matter of quality or fidelity of tone reproduction. The influence of this demand by the listeners has led to the widespread use of higher quality loudspeakers, capable of giving considerable sound intensities, and fed from so-called "power valves" in the last audio-frequency stage of the receiving set. Where a few hundredths of a watt was at one time regarded as adequate for the final practically undistorted audio-frequency output of a receiver, to-day a power in excess of a watt is becoming common.

As a result of this evolution in the acoustic system of receiving sets, listeners are now enabled to secure a reasonably faithful and natural reproduction of the original performance, and an increasingly critical musical faculty is being developed among listeners. Persons who, several years ago, hardly knew one note from another, are to-day enjoying well-reproduced symphony concerts, and are developing a real understanding of the higher types of musical entertainment.

The listeners are concentrating their attention on local stations, which give high-quality programmes, and produce loud and clear signals in their vicinity, and this audience demands receiving sets having excellent tonal quality of reproduction, with adequate volume of sound. As is but natural, such listeners also insist upon simplicity of operation.

We have, therefore, also come to the end of the era of radio receivers, which are too complicated to operate. To-day, the single selector (tunicon) type of receiving set is practically standard. A minimum of receiver adjustments is regarded with favour by the listeners, and, even more marked, is the tendency to

ward socket power operation of receiving sets. The replacement or charging of batteries is on the decline. Simple and reliable receivers, utilising lighting circuit powers exclusively for their operation, have now become widely available, and the public response to them has been so enthusiastic that there can be no question that the socket-power-operated receiver is the type to be most generally used during the next radio era.

A number of receiving sets have been made available during 1927, which clearly belong to the new era in radio reception.

## RADIO ON MILE-LONG TRAIN

### GUARD TALKS TO ENGINE-DRIVER

An American Associated Press message from Albany, New York State, dated January 26, stated.—A new chapter in railroad history was written to-day, when, for the first time, the front and rear ends of a mile-long moving freight train maintained two-way communication by radiophone with a railway signal tower.

R. W. Rice, Jun., R. P. Edwards, and W. B. Potter, officials of the General Electric Company, where the radio equipment was designed, talked from the signal tower at South Schenectady, to D. B. Fleming, general manager, and R. C. Keenan, general superintendent of telephones and telegraphs of the New York Central system, on board a New York Central freight train.

The General Electric Company men questioned the railroad executives concerning the efficiency of the new radio control of the train, and the railroad men replied that it was successful in every aspect.

### One Hundred and Eleven Cars.

The train, consisting of 111 cars, and more than a mile in length, made the run from the New York Central train yards at Selkirk, near here, to Utica, with caboose (guard's van), and locomotive cab in constant communication. The order to start the train was given from the caboose to the engineer, more than a mile ahead, and instructions for the Utica stop were transmitted in the same way.

Railroad executives on board the train expressed the belief that radio installation on long freights eventually would become universal. Heretofore, communication between cab and caboose has

been either through the medium of visible signals such as flags or lanterns, or by the necessarily restricted dot and dash code, by locomotive whistle or compressed air line.

### A Remarkable Aid.

The use of the radio in freight operation is expected to lessen the delays resulting from defective equipment, inasmuch as the engine driver can be informed instantly regarding the trouble, instead of waiting until a trainman negotiates the long, and at times perilous, route from caboose to locomotive. It also facilitates the cutting of cars on sidings, as well as abating the danger of accident to trainmen while running over the tops of cars in stormy weather.

### Equipment Described.

Transmitting and loudspeaking receiving apparatus were installed in both locomotive and caboose. The 50-watts power for the transmitter was furnished on the front end of the train by the locomotive headlight generator, and in the caboose by a generator harnessing the power developed by the revolving axles. The signals were transmitted on a wave band of 109 to 180 metres. The locomotive transmitter was placed in suspension springs in the rear of the tender, with a brass rail acting as an antenna. The caboose transmitter was stowed in a closet, while a wire strung along the roof supplied the aerial.

## NEW ELECTRIC THEORY

### VIBRATION, NOT FLOW.

The electron theory is generally considered to be the explanation of an electric current. The free electrons which every atom is considered to have are supposed to be able to move along a conductor, the ends of which are subjected to a difference of electrical pressure, so that a "current" would be simply a flow or movement of electrons along the conductor.

That the theory has many limitations is recognised by all serious-minded investigators, notably that like charges of electricity repel and unlike charges attract one another; whilst the opposite is true throughout almost the whole realm of science.

But because the theory fits in so well with our experiments it is usually accepted as being sufficient. In a paper read before the Wireless Institute of Australia (Vic. Div.), at its last meeting, an entirely different theory was put forward by Electrical Commander Creswell, R.A.N.

## INTERESTING SUGGESTION.

Briefly, Commander Creswell's theory is that an electric current is not a flow of electrons, but a vibratory movement of the ether medium in all atoms of matter, and in space in which electrons are suspended in characteristic atomic formation, just as the worlds and heavenly bodies are suspended in space. The movement of the ether medium causes an increase in the normal vibration of the electrons within the electron, as opposed to the movement of free electrons from atom to atom along a conductor or conducting path.

Commander Creswell has developed his theory very fully, and applied it to many branches of physical science, and the theory appears to open up a very fascinating field for investigators.

## NEW PRIMARY BATTERY

### AN AUSTRALIAN INVENTION.

A new primary battery with a voltage of 2.5 per cell and lasting for 50 hours with a current drain of one ampere has been invented by a Mr. W. A. Bleck, of Queensland. The battery operates on the Leclanche principle, but is totally different in action. The elements are of carbon and zinc, but two liquids are used instead of the customary ammoniac. In addition, the cell cannot become polarised, so, therefore, can give a constant current for many hours. The cell consists of an outer container of glass; a perforated carbon cylinder, a special porous pot placed inside the carbon, and a zinc pole of special design.

Current is produced immediately, and for the demonstration a 16 c.p. lamp was lit, from two cells connected in series, within half a minute of assembling them.

Mr. Bleck hopes to leave shortly for England to have the battery manufactured, as difficulty has been experienced in obtaining the necessary materials in Australia. On test the cells showed 4½ volts when discharging at 1½ amps, so it will be seen it is suitable for most radio work.

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