

plied with small brass pieces for mounting the panel. If the set is used for portable work, in which case the cover is needed, the panel is mounted below the front of the box; for stationary work, however, the panel may be set flush with the front.

The other parts, illustrated in Fig. 3, include a knob and dial, binding posts, switch points, and switch assembly. The dial, of a non-magnetic alloy, acts as a shield for condensers, eliminating the change of note as the hand is brought near the set when undamped waves are being received. The dial is insulated from electrical contact with the shaft. The knob for this dial and the individual knobs, are designed to take a 8-32 screw put in from the front or a 1/4-in. shaft, held by a set screw. It is interesting to note that the engraving on the dial is so arranged that the indication increases when the dial is rotated in a clockwise direction.

The switch assembly and switch points are intended for use where very little space is available. A fluting on the shank of the switch point holds it in place when driven into the bakelite panel. The binding posts are somewhat similar to those used by the Bureau of Steam Engineering, in that the parts are assembled of an ordinary machine screw, the head of which prevents the thumb nut from coming off, while the threaded part passes through the panel and is held by a nut at the rear.

Here is one of the first definite indications that, more and more, the general design features of radio equipment will be standardized.

Transatlantic Sending Tests

Rapid Progress is Being Made in the Arrangements With English Experimenters Who Will Receive Our Signals

IN the September, 1920, issue of **EVERYDAY** an announcement was made of tests which will be held on February 1, 1921. Space this month does not permit the publication of the letters this month from experimenters who are planning to transmit to England. The following letter was received from Mr. Blake:

London, England,
Sept. 1, 1920.

Mr. M. B. Sleeper,
Radio Editor,
Everyday Engineering Magazine.

Dear Sir:

I am deeply interested in the proposed attempt on the part of American Wireless Amateurs to communicate across the Atlantic, and I need hardly say that I shall have great pleasure, not only in publishing an account in the *Wireless World* of what is being done, but in encouraging amateur men in this country to receive the signals from America.

Also please accept my assurance that in any similar proposition you can count upon my hearty cooperation.

Yours faithfully,
E. Blake,
Editor, *Wireless World*.

Just as soon as the names of those who will receive the test signals can be obtained, they will be published in **EVERYDAY**, so that the entrants in the contest can obtain any information they need concerning the receiving stations.

The Acme Apparatus Company as well as other manufacturers have offered cash prizes, the amounts and conditions to be stated in the November issue.

METHOD OF SELECTING THE WINNER

Considerable thought is needed to determine the fairest way to select the winner when several may transmit successfully across the Atlantic. The following system has been worked out tentatively, subject to suggestions:

1. Three to five receiving stations will be selected. Each is to have an audibility bridge of such proportions as to be suitable for measuring the strength of weak signals.

2. Each contestant, at his allotted time, will transmit his call for 1 1/2 minutes, with a lapse between calls of 1/2 minute. Thus thirty calls can be made in one hour, during which atmospheric condition will not vary enough to put any station at a disadvantage.

3. Transmission will start at 10:30 P.M., February 1, 1921, and the complete schedule will be repeated at that time on February 3rd and 5th. Starting after the time signals, all watches will set alike, and there will be no overlapping.

4. Each receiving station will keep a record of the stations heard and their audibilities. At the conclusion of the tests, these records will be filed with Mr. Blake, who, with two other prominent radio men, will work out the results in this way:

a. Of the measurements made at the different receiving stations, the greatest audibility for each transmitter on each night will be noted, and added together to obtain the "audibility rating" for transmitter.

b. The highest rating will be given a score of fifty, and the others, scores in the same ratio.

c. For each night on which a station's call is heard, 16.666 will be added to its score.

d. Thus the station which has the highest audibility rating, and is heard on all three nights will have a score of 100.

For example, these readings are taken:

	A	B	C
1st night	10	—	5
2nd night	4	—	5
3rd night	—	25	5

These added show A=14, B=25, C=15. Since B is the highest, his score is 50, A's is

$$\frac{14}{25} \times 50 = 28, \text{ and C's is } \frac{15}{25} \times 50 = 30.$$

A is given 33.332 for two nights, B 16.666 for one night, and C, 50 addition because he came thru all three nights. The scores, then are

(Concluded on page 65)

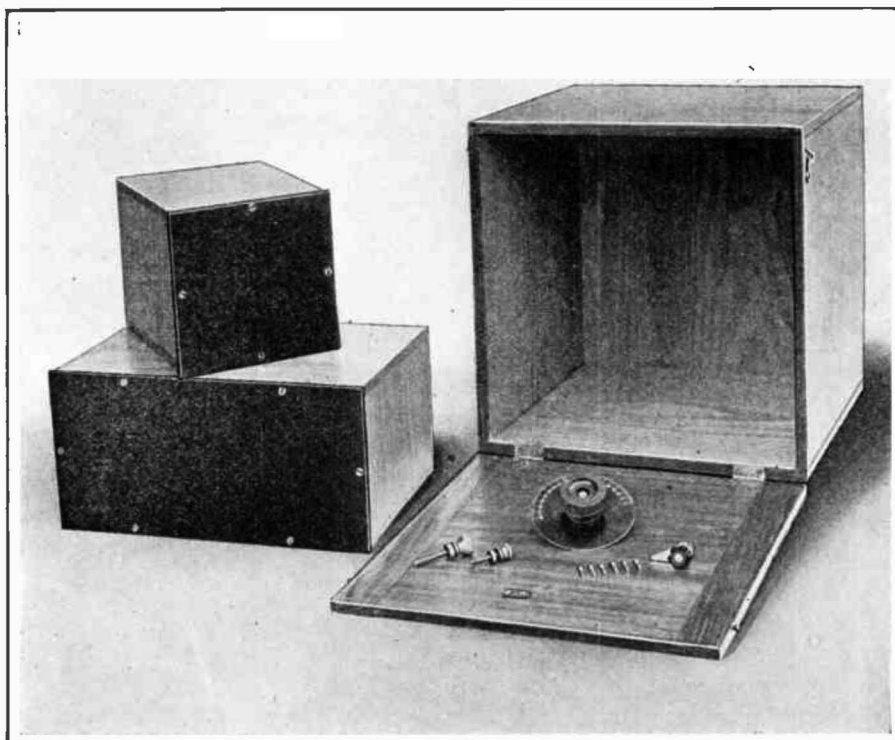


Fig. 2. A 10- by 10-in. panel can be fitted in the box, or the smaller complete cabinets

The Radio Department

A Discussion of Current Topics of Interest to Experimenters and Manufacturers

LORD KELVIN, whose fame as a scientist required no comment, said, "When you are up against a difficulty you are face to face with a discovery." To be sure things of this sort are easy to say, but, strangely enough, such sayings generally come from men whose work has expounded their own theories of working.

There is an incentive to experimenters in those words. Problems take on a new interest when approached from this angle. If it is only a small matter, a circuit that will not oscillate or key that arcs continually, the solution of the difficulty is a real discovery to the man who does the work, even tho it may be known to others. And it is by a series of these small discoveries that experience is accumulated which constitutes the knowledge by which greater problems are overcome.

The true experimenter, the one whose work is of value to himself and others, has Lord Kelvin's attitude.

RADIO and aeronautical men in particular and the public in general should know more about the Airplane Mail Service. A special feature of this Service is outstanding, almost unknown to those not intimately concerned with this part of Governmental activity, namely the treatment of those who suffer personal or property injury thru accidents to the mail planes.

When a pilot, mechanic or radio operator goes into the Postal Service, he must sign a waiver of claims against the Department. This means that, if the man is killed or injured, no claims can be filed against the Government. If a machine lands in a wheat field, or knocks in the roof of a house, the owner can be reimbursed only by an act of Congress. In other words, the man must send a legal counsel to Washington, and go to such expense and delay that those who do suffer such damages charge them to profit and loss and forget it.

Our legislators have passed the Workman's Compensation Act for the protection of the employees of privately owned companies, and provides pensions for the men in other Governmental Branches, but the Airplane Mail men must assume their own losses.

Steps should be taken to protect the employees of the Airplane Mail Service, and to provide a means for paying losses to those whose property is damaged by Post Office Machines.

AT the first fall meeting of the Institute of Radio Engineers, Dr. Goldsmith read a paper by Dr. Engen Nesper of Vienna, Austria, on "Recent Progress in Radio Communication in Germany and Austria." The instru-

ments described in this paper are: two vacuum tube transmitters and receivers, an amplifier, a loop receiver, oscillator, and measuring instruments.

Unfortunately, the description of the apparatus and its operation left much to the imagination. One of the sets discussed was built to operate on 50 to 100 meters, yet no account was given of the method employed to receive signals on such short wavelengths. While the apparatus was beautifully made, apparently, the impression was that considerable efficiency must have been sacrificed for elaborate circuits and crowding of the instruments.

In the introduction, mention was made of the use of vacuum tube equipment by the Central Powers during the War. Mr. Armstrong, in the discussion, stated that such equipment was not used by those countries for work at the front, and all the information in the hands of the Allied Armies confirms his statement.

However, the paper in spite of its questionable points, was of interest because it indicated the progress abroad, compared to which our own work is very gratifying.

THE Radio Engineering Society of Pittsburgh, probably the third largest radio society in this country, has incorporated in its activities ideas which offer valuable suggestions to other clubs. Not only do they hold the interest of their members, but they keep the Society before the eyes of the public.

Their convention, held at Pittsburgh a short time ago, was a distinct and surprising success. Instead of celebrating the occasion with the usual formal banquet at which a man can only talk to his neighbor and has to keep quiet most of the time anyway, they held the convention out in the woods, several miles from the city. Members who owned cars carried out those who did not.

Early in the forenoon the men assembled in a beautiful valley, aptly chosen, for a brook ran thru it, and there was a spring nearby. When the writer reached the place, several antennas had been run from automobiles to the trees on the hillside, and ground wires buried in the brook. A telephone set, run from a motor-generator operated on an automobile storage battery, was set up. At the far end of the valley, a Magnarox was reproducing music from a phonograph.

Shortly the Magnarox was changed over to a hand microphone by which Mr. Urban, Secretary of the Society, called the men together, and announced the first of a series of contests. A portable transmitter was carried away out

of sight by two operators. Shortly the entrants to the contest listened in on a radio compass for the hidden set. Having determined the direction, they dashed away to find it, the first to reach the hiding place being the winner.

Jamming tests, and other contests were carried out. Radio companies in Pittsburgh offered generous prizes to the winners. A lunch was served at noon, and another at the close of the day.

But best of all was the opportunity for men from far and near to get together to exchange ideas and experiences. There was no feeling of restraint or formality. Probably there was more of a discussion of radio in that one day than at any other convention of wireless men ever held.

Largely due to the efforts of Mr. Urban, the City of Pittsburgh has given the Society club rooms in one of the public buildings. To keep their work before the people, Mr. Urban conducts a radio department in one of the newspapers.

Surely there are some ideas here for other radio clubs which aspire to the success of the Pittsburgh Radio Engineering Society.

TRANSATLANTIC SENDING TESTS

(Continued from page 63)

A	B	C
14	50	30
33.332	16.666	50
47.332	66.666	80

An examination of these scores shows that A's station was not at all dependable in operation. Perhaps, overloaded at the start, it broke down.

B's equipment was good, but its owner, with months to prepare, was not ready at the right time.

On the other hand, C got thru every time, and deservedly, had the highest score, for the object of the contest is not simply to transmit across the Atlantic, but to test the designing and operating skill of the contestants.

Under the circumstances, the likelihood of a tie score is negligible. In that event, it would be necessary to repeat the tests.

NORTH BORNEO WIRELESS STATION

AT the half yearly meeting of the British North Borneo (Chartered) Co., held in London recently, it was said that the wireless system was working most efficiently. Uninterrupted communication was maintained throughout the year 1919, except for a day and a half, which the Sandakan station was closed. The inauguration of a wireless service between Jesselton and Sarawak had been followed by the establishment of a regular wireless service between North Borneo and the Philippine Islands.