

Dutch PCII.

BY A DUTCH CORRESPONDENT.

PCII was one of the first Dutch stations to be received by British amateurs, and it is thought that some details of the latest improvements will be of interest.

IN spite of our very, very bad situation owing to our position with the authorities we have tried to take our share in amateur transmitting, and soon we hope to make it still better.

Rg on one valve (or A4I as we say now) with the frame at right angles to my direction.

Last week I went down to see why his signal strength had increased so awfully (!) Well, he showed me his hot-wire ammeter,

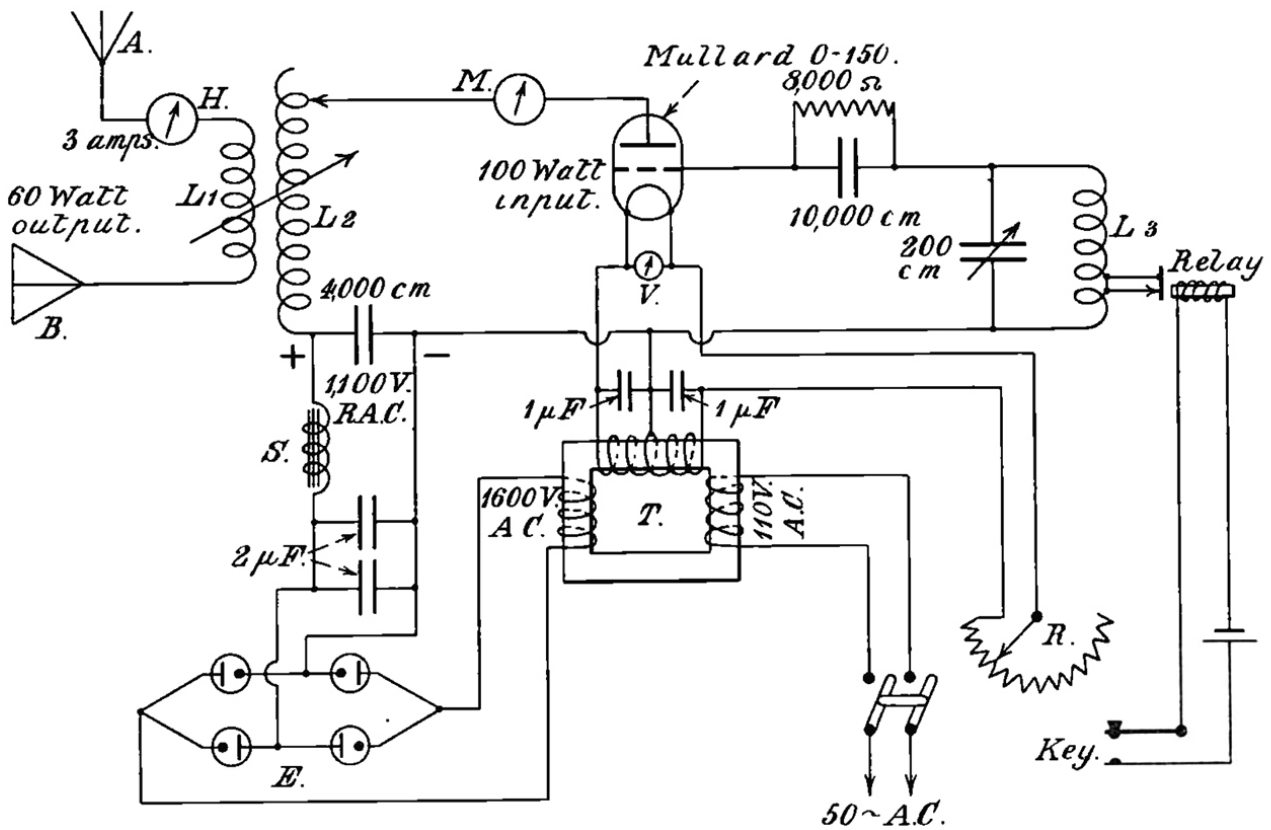


Fig. 1.—Showing the transmission circuit, which is described in detail in the text.

May I now introduce to you our famous PCII station?

It is located "somewhere in Holland," "ten miles from Amsterdam," "ten miles from the Hague," etc. • He who has worked PCII knows better. Ask 2KF for details.

The other day I was looking for some news at his place and nearly stumbled down over a thin wire drawn one inch above the floor for about 24 feet, and then disappearing in the ceiling. It was part of the 390 square feet transmitting frame. PCII was just busy to put some 2 amps into it on a 220-meter wave. Later on the evening I heard him from my station (distance about ten miles)

rated 0.4 amps. It was burned out. That afternoon he had connected two additional wires to his counterpoise and the ammeter went up in smoke. And for some time he didn't know whether he had 5 amps. or 50 amps. in the aerial!

This is PCII—and now the apparatus.

The circuit in use is the Armstrong-Kühn transmitter with chemically rectified A.C. for plate supply. The most interesting point of this circuit is the position of the grid-coil, which is tuned by a variable condenser to the wave-length corresponding with the natural period of the antenna-counterpoise circuit. Whereas the plate-coil is not tuned critically

the slightest alteration of the grid circuit (for instance, shortening of a few turns of the grid-coil for keying) will stop the radiation absolutely. The grid-coil is placed at right angles to the antenna and plate-coil and about two feet apart to prevent coupling or reaction. The oscillations are set up only by the electrostatic coupling due to the internal elements of the valve.

The circuit is given in detail by Fig. 1. It explains itself fully, but for the experimen-

building up of undesired high-tension currents.

- E Chemical rectifier, consisting of four groups of eight jam-pots connected to get full-wave rectification. The electrodes are Al and Pb. The solution is 5 to 7 per cent. phosphate of ammonium with distilled water.
- T Transformer with primary winding for the 50-cycle 110-volt line, a step-down coil with midtap, wound to the proper

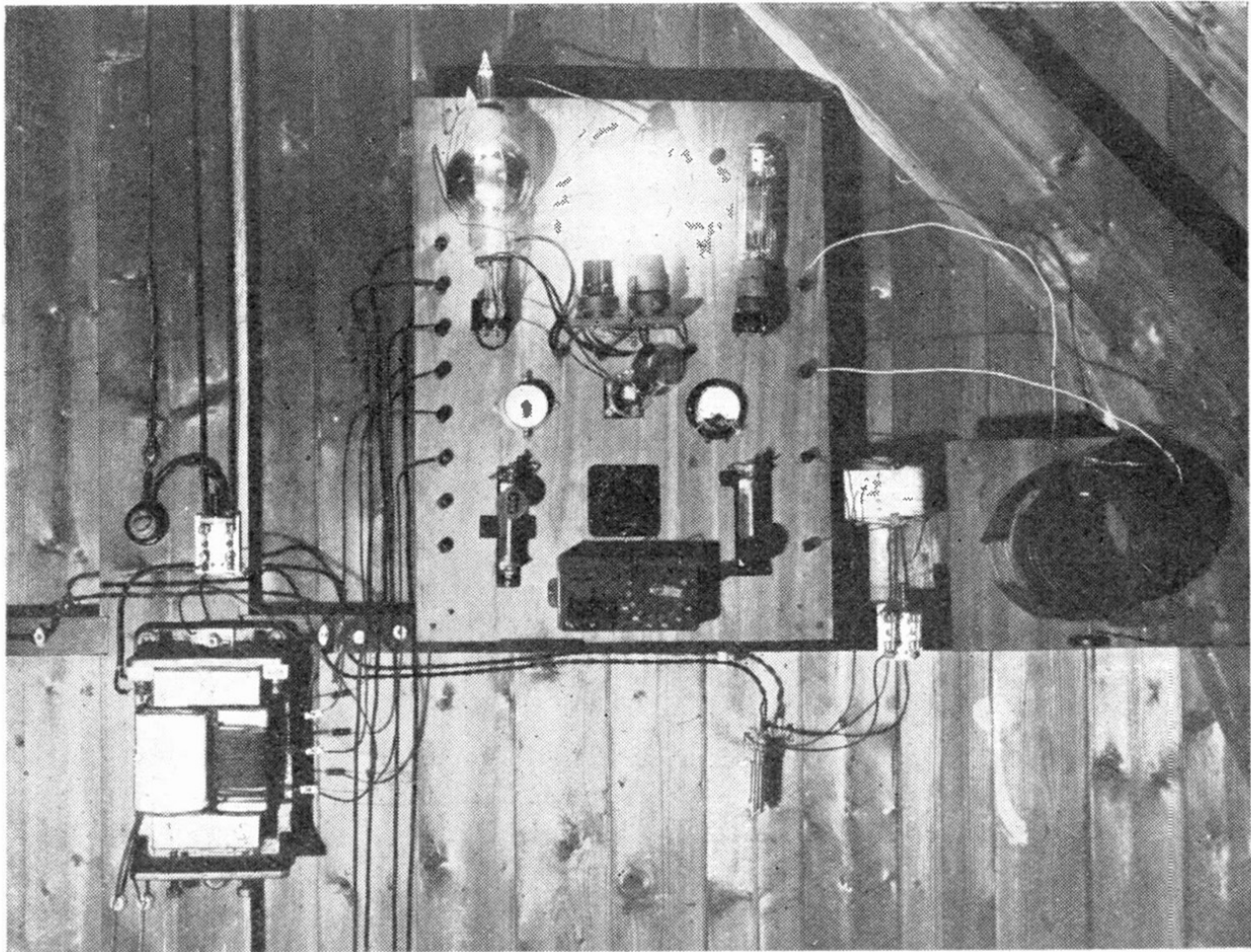


Fig. 2.—A near view of the valve panel and transformer.

ter it will be interesting to have the constructional data as completely as possible.

The components of Fig. 1 are as follows :

- L_1 Aerial inductance, 9 turns diameter 12 cm., revolving inside L_2 .
- L_2 Plate inductance, 19 turns, diameter 17 cm., tapped.
- L_3 Grid inductance, 23 turns, diameter $9\frac{1}{2}$ cm.
- R Filament resistance, shortened when filament is properly lighted ; used only for starting the valve slowly to prevent the

filament voltage, and a high tension section giving 1,600 volts. After passing the rectifier and the filter circuit, the R.A.C. voltage left is 1,100 volts. The cross section of the transformer-core is $4 \times 5\frac{1}{2}$ c.m.

- S Filter-choke of 3,000 turns 0.5 mm. wire on core of $3 \times 3\frac{1}{2} \times 15$ cm.
- V Voltmeter controlling filament voltage.
- M Ammeter giving the milliamps. in the plate current.
- H Aerial hot-wire ammeter. Shows 3

amps. on 100 watts input and 60 watts output.

The transmitter apparatus are at 20 ft. distance from the receiving set. The keying is done by a relay-line, as shown in the drawing.

trapezium. The operating wave-length with L_1 as aerial coil is 203 m.

To make the operations for switching-over as simple as possible, as well as to eliminate all losses developed by complicated wiring, PCII has erected a separate receiving aerial

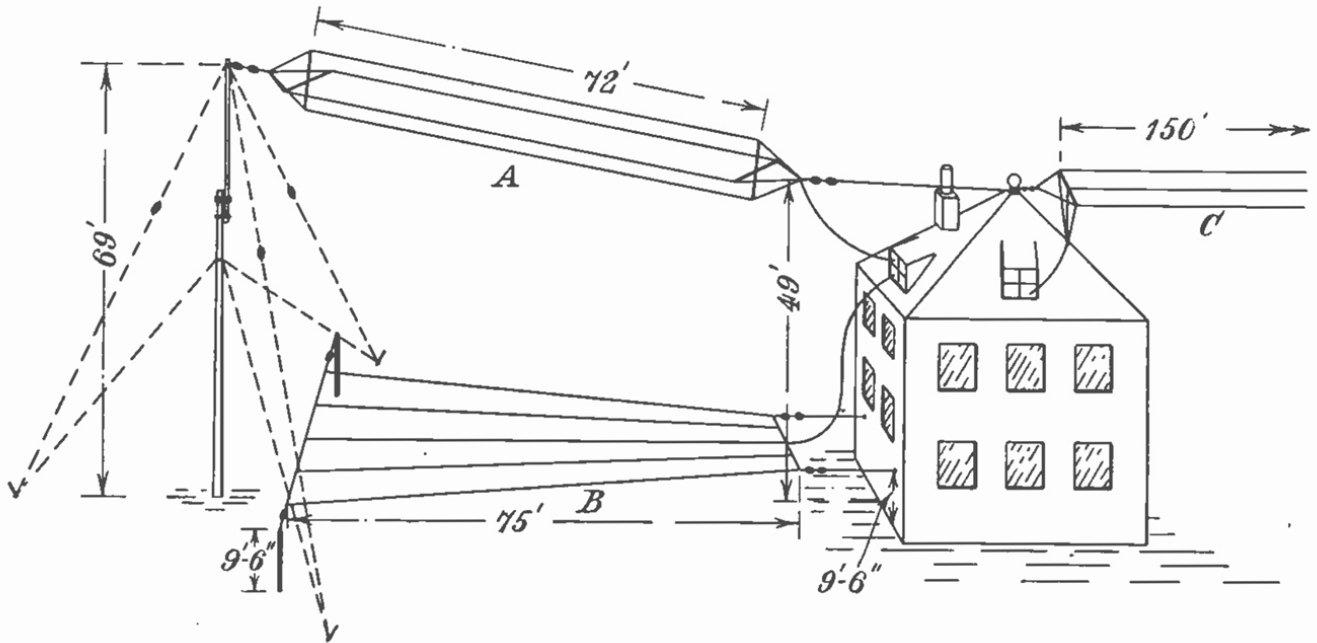


Fig. 3.—The radiating system showing the separate receiving aerial.

The part of a transmitting station outside of the apparatus is in no way less important. Probably PCII owes very much of his fine results to the well-constructed antenna system.

(C) of the inverted L type, 150 ft. in length, three wires. This aerial runs at right angles to the transmitting antenna system, and at proper distance to eliminate losses, etc.

Fig. 2 gives a photograph of the transmitter

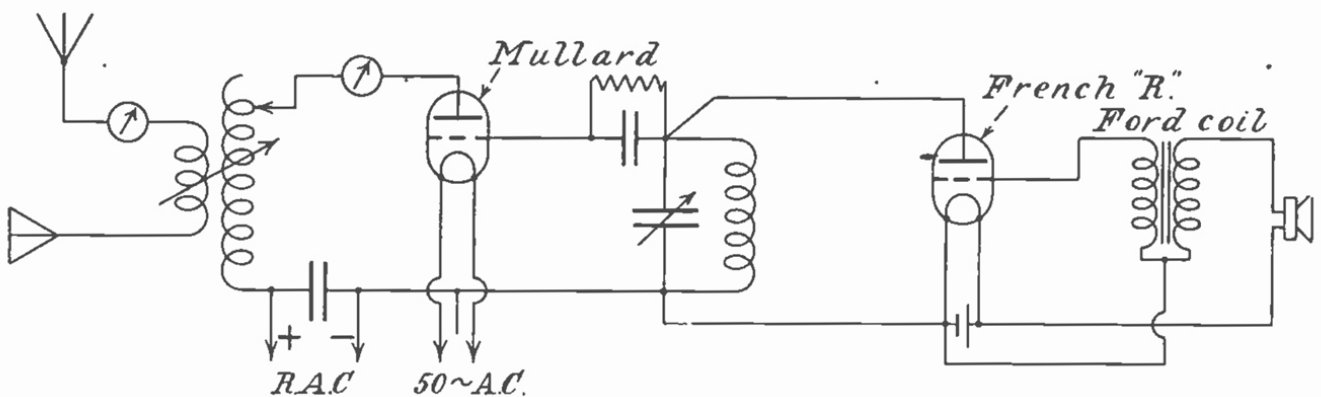


Fig. 4.—For telephony, absorption modulation and a tuned grid circuit are employed.

The four-wire cage aerial (A) is supported by the roof of the house, and a splendid 69 ft. pole, average height 60 ft. above the ground, and 50 ft. above the counterpoise. The counterpoise (B) is suspended symmetrically under the aerial, consisting of five wires of 75 ft. each. The form is of the fan type, or better still, it can be compared with a

valve panel, the inductance coils, and the transformer. Note the simple wiring. Besides the 0-150 Mullard at the left upper corner of the panel, there are mounted three Telefunken 5-20 transmitting valves, two of which are connected in parallel with the "big bottle" to increase the power. The third 5-20 valve (type RS.5) is used for rectifying

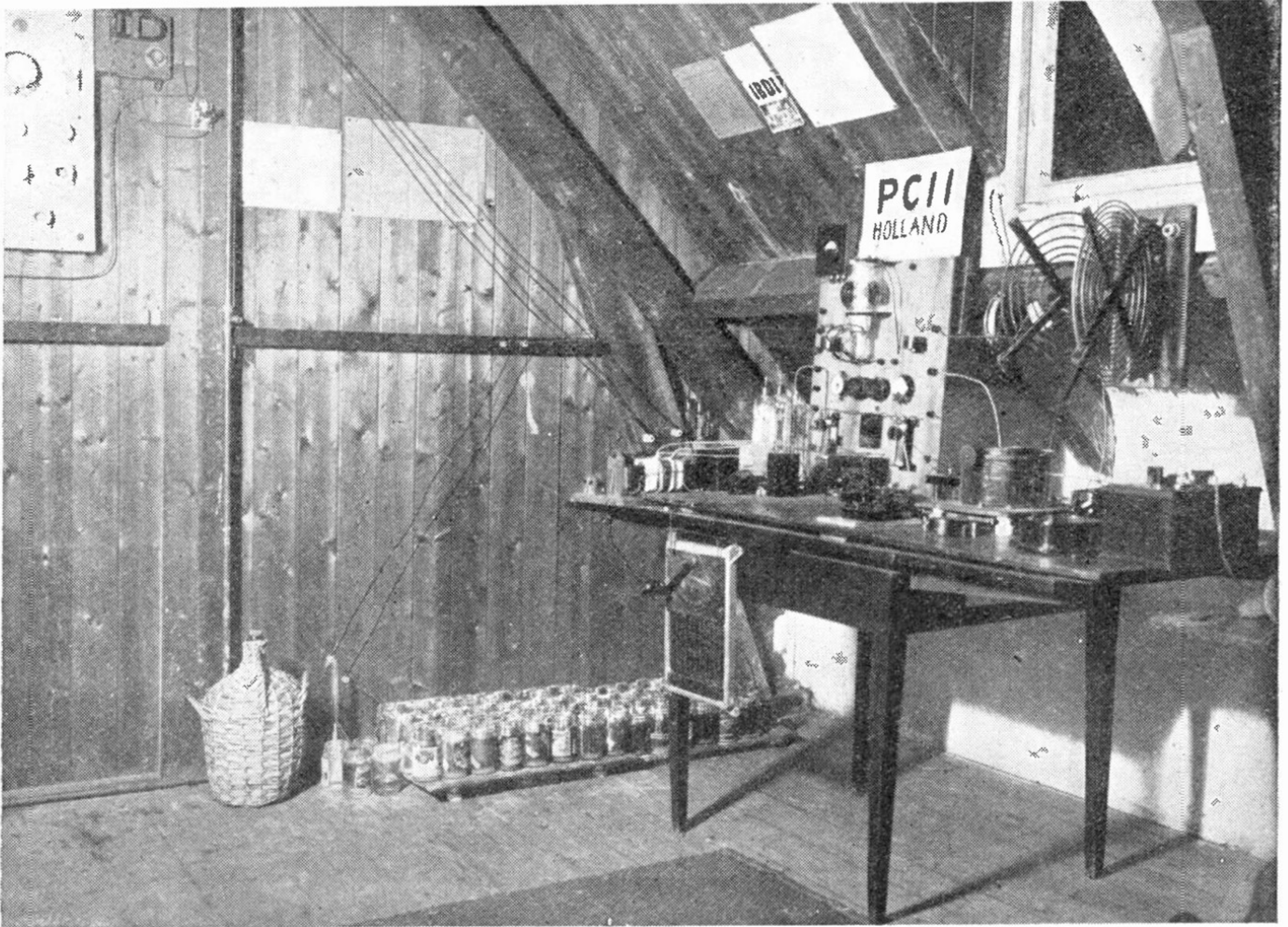
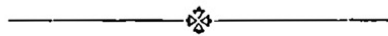


Fig. 5.—A General View of the Apparatus. Note the Chemical Rectifier in the Corner of the Room.

purposes. Right in the centre of the panel is a French R valve (receiving type) used as modulator for telephony.

Fig. 4 shows the general arrangement of the telephony circuit (got it from 2KF!). Good results were obtained at the first tests with 5KO (Bristol), reporting strong and clear speech.

The receiver in use for the short waves is a special Reinartz one-valve set of original design, using normal spider-web plug-in coils. Waves down to 40 m. can be received with this arrangement without difficulty. American amateur signs are coming in very well with one valve.



Overseas Transmission.

Amateurs holding transmitting licences are reminded that communication with foreign countries must not be conducted without permission from the Post Office. When working tests, the following inter-

national prefix should be used:

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|-------------|-------------|
| V A Canada | K B Germany |
| O U Denmark | I Italy |
| O N Belgium | F France |
| P A Holland | E A Spain |