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It keeps them warm—It gives them comfort—  
Wool worn next the skin is the way Nature intended the body to be protected—  
Chills and colds are dangerous—secure all the protection you can by wearing:

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A sensitive skin requires a fine, soft, downy under-clothing.

Some people say they cannot wear wool next the skin. Such should try Turnbull's "CEETEE" brand.

Anyone can wear it with perfect comfort. It is the "woollen underwear without the itch," and the only underwear made in Canada that is re-inforced where the wear and strain are.

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Made in plain or ribbed, in wool, mixed, and pure cotton.

All pure wool—re-inforced at all wearing parts, and full fashioned.

Made by **Turnbull's** of Galt, Canada.  
for over 60 years

## RADIO DEVELOPMENT BY LIEUT. JOHN R. IRWIN U. S. AIR SERVICE (RESERVE)

### VOLTAGE DROP IN THE LINE.

Suppose that a direct current generator capable of supplying 115 volts at the outgoing wires of a power house is furnishing current to a distant building for lighting lamps which require 110 volts. Suppose that the line resistance is 0.1 ohm, and that the lamps require 60 amperes of current. There is then a line drop of 5 volts, and the available voltage at the generator is just right to operate the lamps at their rated voltage. Suppose, however, that other apparatus near the lamps, say, the motor of an elevator, is put in operation and that this requires 100 amperes of current. The line drop is then increased by 10 volts, or 15 volts in all, and the voltage available at the distant end of the line has fallen to 100 volts. This is not sufficient to maintain the lamps at full brightness and they will be dimmed perceptibly every time the elevator is operated. To correct this difficulty a new line

of lower resistance must replace the old one; that is, the line drop must be decreased so that for the maximum current demand the lamps will not fall below 110 volts.

Another example of the line drop is seen in the dimming of the lights of a trolley car when the car is starting. The resistance of the trolley wire is kept low by using a large cross section of copper, and the track resistance is kept as low as possible by careful bonding at the rail joints. However, a few defective joints raises the track resistance and increases the line drop to such an extent that the necessary lamp voltage cannot be maintained when the car starts.

This track bondage can be observed on any railroad and the above answers the question the writer has often heard as to the "why" that rails are jointed with copper connections.

(Continued in next issue.)

## APPARATUS AND DEVICES

By RALPH BROWN, RADIO ENGINEER  
RADIO FREQUENCY TRANSFORMERS.

Radio frequency amplification offers unusual advantages in receiving radio signals of all types, especially radiophone or modulated waves, over all other known methods of receiving. The use of the audio amplification is familiar to operators and is known to be limited. A signal which is too weak to operate the detector tube can never be amplified by audio amplification, regardless of the number of stages used. After the signal is strong enough to operate the detector audio amplification is effective up to two stages. Audio amplification beyond this is limited by distortion and inherent audio tube noises.

By radio amplification the original weak incoming signal is raised to a value for effective operation of the detector tube. Regardless of how weak the signal is to start with, a proper radio is to start with, a proper radio is sufficient strength to make the detector function, after which audio amplification may be applied. Stations which are normally beyond range can, therefore, easily be brought in by using radio amplification.

By using a correct radio trans-

former the incoming signal frequency is amplified without the accompanying tube noises and local sounds, since the transformer will not respond to low frequency or audio sounds. Jarring the receiver in any way, as with audio, nor limit the number of stages of radio amplification which the operator desires to use.

tubes, &c., will, therefore, not produce a ringing sound or disturb the receiver in any way, as with audio, nor limit the number of stages of radio amplification which the operator desires to use.



Will readers interested in these radio articles kindly communicate with the editor by mail?

### PROHIBITORY POWERS ARE VERY EXTENSIVE In regard to a Province Interfering With "Civil Rights."

Vancouver, B.C., Oct. 9.—The prohibitory powers of the province to interfere with "civil rights" are very extensive, according to Justice Martin, of the British Columbia appeal court. The matter arose during an argument before the court of appeal in the case of Aaron Morley vs. the Corporation of Oak Bay, near Victoria. Morley, the appellant, is attempting to quash the municipality's by-law prohibiting horse racing. It was a question whether the B.N.A. Act conferred powers on the province under the section dealing with "property and civil rights" to legislate about horse racing. E. C. Mayers, for Morley, contended that horse racing came under the dominion's jurisdiction and that provincial legislation, enabling municipalities to prohibit or regulate the sport, was ultra vires.

Justice Martin interposed that the province under the guise of legislating about "property and civil rights" had taken a coal mine away from one and given seventeen to another. His lordship suggested that the provincial government could abolish the

wearing of hats throughout British Columbia. He instanced the abolition of the wearing of wigs in judicial courts throughout the province, an enactment passed about twenty years ago and the validity of which Justice Martin questioned.

### "Dry Ship" Law May Divert Trade to Canada

Washington, Oct. 9.—The effect of the ruling by the United States Attorney-General, banning liquor on foreign ships in United States waters and on United States vessels anywhere, will be to divert a number of foreign ships from United States North Atlantic ports to Montreal and Nova Scotia ports, according to predictions in many quarters. Chairman Lasker of the shipping board predicts it will have this effect and also will cause vessels to go to Vancouver instead of Seattle and Portland.

Alberta will not compete efficiently at International Live Stock Show at Chicago this year.

Poultry producers to meet in Ottawa for the purpose of discussing registration of birds.

Loose, wet gravel on road near London caused auto to overturn, seriously injuring two.

One million five hundred thousand victims of floods in Northern Benegal government could abolish the

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L.V. CAPE VINCENT	8:45 a.m. and 5:00 p.m.
A.S. KINGSTON	11:25 a.m. and 5:45 p.m.

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## The Present And the Future

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### HEAVY CALIBRE SHELLS DUMPED AT QUEBEC

Quebec, Oct. 9.—The Quebec Chronicle says: "It now transpires that the recent cargoes of shells of heavy calibre which were unloaded at Levis and transferred to the forts at Levis and that city are only a small portion of the munitions which have been unloaded here from vessels of the Canadian Government Merchant Marine all summer.

"Almost every week since the opening of navigation cargoes of these shells have arrived from England and have been unloaded here. The forts at Levis as well as the former Ross rifle factory in this city are filled to bursting with these high explosives.

"The storing of the shells here has aroused considerable comment in military circles as the artillery has been removed from this city and as the shells are only guaranteed up to the year 1925, there is much speculation as to the reason for making Quebec and Levis the storehouse of these high power munitions.

Veterans of Hamilton join in plan to unite their organizations in order to secure greater efficiency.  
Michigan Pikers plan 1923 tour over Ontario roads, with Ottawa as eastern terminus.

Justice Martin interposed that the province under the guise of legislating about "property and civil rights" had taken a coal mine away from one and given seventeen to another. His lordship suggested that the provincial government could abolish the

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will be stamped with their general trade mark, the "Bayer Cross."