# Concerning Aubilier



WILLIAM DUBILIER

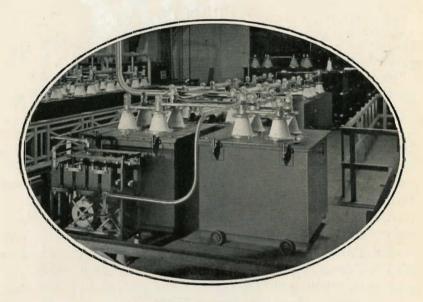
/ 339 GARDEN ROAD

PALM BEACH, FLORIDA 33480









A bank of Dubilier Condensers at the new Post Office Radio Transmitting Station at Rugby.

#### DUBILIER CONDENSER CO. (1925) LTD.

DUCON WORKS, VICTORIA ROAD NORTH ACTON, LONDON, W. 3

Telephone: Chiswick 2241-2-3

Telegrams: Hivoltcon, Phone, London

PRICE LIST FOR 1926-7.

#### CONTENTS

		P	AGE
A Piece of Wireless History		3, 4	, 5
Switch-room and Testing Transformer			6
The Making of the Dubilier Mica Condense	r		7
Testing Plates and Mica Room			8
Machine Shop			9
The Dubilier Universal Condenser, Type 57	7		10
The Dubilier Mica Condenser, Types 600 and	600a		11
The Dubilier Mica Condenser, Types 610 and	1 620		12
The Dubilier Mansbridge Condenser			13
The Dubilier Dubilicon			14
The Ducon			15
The Dubilier Anode Resistance			16
The Duwirohm			17
The Dumetohm and Grid Leak			18
The Duvarileak and Duvolcon			19
The Dubilier Vanicon Variable Condenser			20
The Dubilier Double Vanicon Variable Cond	enser		21
The Dubilier Duwatcon Variable Condenser			22
The Dubilier Vanicon Square Law Condenser			23
The Dubilier Univane Variable Condenser			24
The Dubrescon			25
The Minicap Anti-Capacity Switch			26
The Dubilier Mansbridge Variometer			27
Dubilier Agents' Names and Addresses in Br	itish Is	les	
and Abroad			28

# A Piece of Wireless History

"When a nail or piece of brass wire is put into a small apothecary's vial and electrified, remarkable effects follow, but the vial must be very dry and warm. I commonly rub it over beforehand with a finger on which I put some powdered chalk. If a little mercury or a few drops of spirits of wine can be put into it the experiment succeeds the better. As soon as this vial and nail are removed from the electrifying glass, or the prime conductor to which it hath been exposed is taken away, it throws out a pencil of flame so long that with this burning machine in my hands I have taken about sixty steps in walking about my room; when it is electrified strongly I can take it into another room, and then fire spirits of wine with it. If while it is electrifying I put my finger or a piece of gold which I hold in my hand to the nail, I receive a shock which stuns my arms and shoulders."

This letter was written on October 11th, 1745, by Von Kleist, an ecclesiastic of Camin who had been experimenting with electrified bodies. It marked the first discovery of the principle of the condenser, although in the following year Professor Van Musschenbroeck, of the University of Leyden, made the same discovery independently; and as often happens in these cases it was the second discovery that gave its name to the apparatus; and the first form of the condenser became known as the Leyden jar.

For years the Leyden jar was nothing more than a toy. French Kings were amused by the electrification of chains of monks and guardsmen, all jumping together as the circuit was completed. Amateur Scientists of the type that abounded in the 18th century electrified seeds, vegetables and animals by means of the Leyden jar, and noted the results.

Not until the matter was taken up by that unusual combination of scientist and statesman, Benjamin Franklin, was any real scientific progress made in elucidating the theory of the Leyden jar. He it was who discovered the method of cascade connection, which greatly increased the total discharge current. He also proved among other things, that the charges in a Leyden jar accumulated not on the surface of the jar, but on the metallic coating.

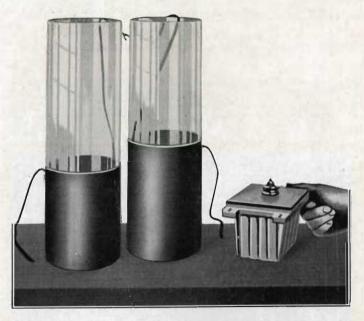
Franklin's famous experiment with the Kite was in connection with Leyden jars. He flew the Kite during a thunderstorm, the string being connected to a form of Leyden jar of which one plate was earthed. The Kite string acted as a lightning conductor, and the difference of potential between the clouds and the earth was thus used to charge the condenser.

In spite of these many experiments, however, no material change was made in the form of the Leyden jar, which had settled down in the form illustrated. It consisted of a glass jar coated outside and inside with tin foil or electrolytically deposited copper. In 1901 Marconi succeeded in signalling from Poldhu (Cornwall) to Glace Bay, Cape Breton, by wireless, using a big battery of such jars. At a later date large air condensers were used in land stations, and the Marconi Company also used large condensers having glass as a dielectric, the plates being aluminium foil.

All these condensers, however, were very unsatisfactory. They took up a very great deal of room—particularly the air condensers; they were inconvenient to handle and very unreliable in operation. They could not withstand any high potentials, and their life was short. The average life of a glass condenser is less than a year, while the hysteresis loss and brush discharge and consequent heating in a high-tension high-frequency circuit is very considerable.

It was about sixteen years ago that William Dubilier first directed his attention to the design of a wireless set that would be sufficiently small and light to be carried and used in an aeroplane. Leyden jars were particularly unsuitable for this purpose on account of their brittleness, and in 1910 Dubilier was successful in making a condenser in which Mica was the dielectric. It proved to be satisfactory when tested, and in 1913 the British War Office Wireless Committee received the invention so favourably that Dubilier was encouraged to begin the development and manufacture of mica condensers in England.

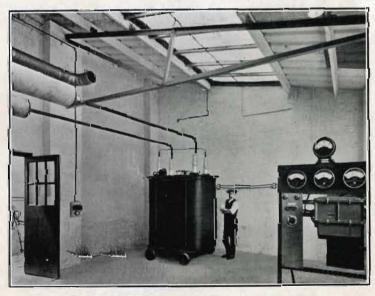
Since that time the remarkable developments of wireless have made condensers indispensable, and the Dubilier Condenser Company hold a position that is outstanding among wireless and electrical manufacturers.



Comparative sizes of Dubilier Standard Mica Condenser and its equivalent, two Leyden jars, which it replaces with much greater efficiency and without danger of breaking.



SWITCH ROOM
Supplying power and light throughout the whole factory.



THE 200,000 VOLT TESTING TRANSFORMER.

# The Making of the Dubilier Mica Condenser

THE manufacture of all Dubilier products is carried out in one of the largest, best-equipped, and most airy factories in West London.

The mica comes in bulk from the Indian Mines, and is deftly split into thin sheets by girls armed with slender steel knives. It is then cut to size and shape, and the separate pieces are measured by an apparatus that at once shows the exact thickness on a dial. After being graded, each thin piece of mica, between 1/1000 and 3/1000 of an inch thick, is electrically tested by being put on a metal plate that forms a terminal of a high-frequency high-voltage circuit. An electric brush connected in the same circuit is run over it, and a discharge of blue sparks runs over the mica and down on to the plate. If the sparks appear to pass through the mica, however, the piece is electrically weak and is discarded.

After this, the mica sheets are tied up in packets according to size, and sent up to a department where the condenser units are made up. Girls with quick fingers interleave mica and foil in various numbers and sizes. These units are bound and pressed, and the end connections are made on the two sets of plates. After one more electrical test the units are ready for fixing in the mouldings, and this work is quickly done by men who are expert at delicate soldering. The moulding is then filled from the back, and the condensers, Types 600, 600A, 610 and 620, are all ready to be sorted for capacity. Each separate condenser undergoes a laboratory test for capacity, and it is not until it has actually been measured that the capacity of a Dubilier Condenser is fixed. Absolute accuracy of specification is therefore assured, and if you buy a Type 610 in a box marked '001 mfd. you are quite sure that that is the actual tested capacity of the condenser within specified limits. While it is not possible

to give details of the manufacture of the other Dubilier products, the rigorous testing and skilful organisation that go to make the Dubilier Mica Condenser what it is are also vital characteristics of the production of all the other Dubilier manufactures. The Type 577 Condenser is tested at 2000 Volts D.C., Grid Leaks at 100 volts, Anode Resistances at 200 Volts, and the Ducon at 2,500 volts, before being sold, and all goods found to be faulty are at once replaced by us. It is worthy of note that the principal wireless stations of the world make use of Dubilier High Power Condensers, which are made up of thousands of units similar to those that are used in the production of the small condensers for receiving sets.

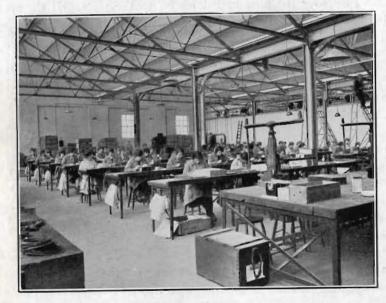


MACHINE SHOP.

This shop is equipped with the most modern plant for the production of parts used in the manufacture of Condensers, from the small type for Broadcast Receivers to the high power Condensers for the world's largest Radio Stations.



TESTING MICA PLATES



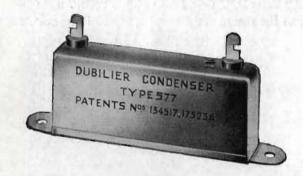
MICA ROOM.

#### DUBILIER CONDENSER CO. (1925) LTD.

The

## Dubilier Universal Condenser

Type 577



THIS special Dubilier Universal Condenser is suitable not only for general use in all receiving circuits, but also for transmitting purposes—e.g.: D.C. transmitters and other valve transmitters up to 100 watts. The voltage limits for the Type 577 are 2000 volts D.C. or 1000 volts A.C. (Low frequency). The larger capacities of this type will carry radio-frequency currents up to 1 amp. and the voltage limit at the higher frequency is 500 volts.

The Dubilier Universal Condenser has a dielectric of the best Indian Ruby Mica, which is standard in all Dubilier Fixed Condensers, and the casing is finished in polished nickel. It can be supplied with tag terminals as shown, or with flexible wire connections, as required.

Standardised in capacities from 0.0001 mfd. to 0.01 mfd.

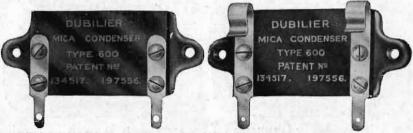
# Price 7/6 Each

At the above price the accuracy of the rated capacity is guaranteed to within 10%. For accuracy up to 5% the price will be 10% greater, and for accuracy up to 1% the price will be 15% greater.

The

# Dubilier Mica Condenser

Type 600



THE Dubilier Type 600 Mica Condenser is designed for general use in Wireless receiving apparatus. The makers had particularly in view the production of a condenser having minimum losses and therefore maximum efficiency, and the Type 600 represents the achievement of that aim. It is constructed with a mica dielectric—a form of condenser which we were the first to make—and is enclosed in a moulded insulating case which carries the tag terminals.

The type 600 is tested at 500 volts before sale, and it is interesting to note that the unit of which it is composed is similar, though on a smaller scale, to that used in B.B.C. stations and in transmitting stations all

over the world.

It is sold either with or without grid leak clips, as required.

Capacity Pric 2/0.0001-0.0009 mfd. ... 2/0.001-0.006 mfd. ... 3/
(with or without grid leak clips.)

IMPORTANT.—In no circumstances must any attempt be made to remove the centre screws of type 600 Condensers. The slightest turn on either one of these screws will result in the Condenser becoming disconnected, and no responsibility will be accepted for damage caused in this way.

#### Type 600a

This Dubilier Mica Condenser consists of the same unit as the Type 600, but the moulding is of a special shape, suitable for mounting vertically in cases where the panel is crowded. The terminals are of the tag type, situated on the top of the moulding.



The prices and capacities are the same as for Type 600.

At the above prices the accuracy of the rated capacity is guaranteed to within 15%, where closer limits of accuracy are desired special prices will be quoted on request.

The

# Dubilier Mica Condenser

Type 610

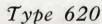




THIS condenser is suitable for use everywhere in receiving circuits. The condenser unit is the same in essentials as that of the well-known Dubilier Type 600. As a whole, however, this new condenser represents a distinct improvement. The moulding is of a different design, and the terminals are of the screw type, though the connections can easily be soldered if required. The application of a soldering iron does not in any way affect the moulding or impair the efficiency of the condenser.

The Type 610 is supplied with or without Grid Leak Clips, as required. These are detachable—an added convenience when, during experimental work, it may be necessary to remove the clips.

Capacity		Price
0.0001-0.0009 mfd.	 	3/-
0.001-0.009 mfd.	 	3/6
0.01 mfd	 	4/-
0.011-0.015 mfd.	 	4/6





THIS condenser is similar to the Type 610, and can be used for the same purpose. The moulding, however, is of a special shape for vertical mounting in cases where considerations of space preclude the use of the type 610. The terminals are of the screw type, and soldered connections may be made if desired.

Prices and capacities are the same as for the Type 610.

At the above prices the accuracy of the rated capacity is guaranteed to within 15%, where closer limits of accuracy are desired, special prices will be quoted on request.

# Dubilier Mansbridge Condenser



THESE condensers are made under the ægis of Mr. G. F. Mansbridge, the famous inventor of this type of condenser, and although this in itself is sufficient evidence of good design and efficiency, they are, in addition fully guaranteed by the Dubilier Condenser Co. (1925) Ltd.

Dubilier Mansbridge Condensers are used in Radio Receiving Apparatus where large capacities are required, and can be obtained in the range of capacities mentioned in the list below.

These Condensers have been designed specially to meet the requirements of the experimenter, and for ease of connection are fitted with screwed nickel plated terminals and solder tags, which are insulated from the all-metal case by bakelite bushes.

The metal cases are of a distinctive maroon colour, and all condensers which are genuine products of this Company bear the words *Mansbridge Condenser* in raised letters on the case as shown above.

For receiving apparatus, the Dubilier Mansbridge condenser is suitable for a test pressure of 300v. D.C., but condensers suitable for higher voltages can be supplied when required.

#### STANDARD CAPACITIES AND PRICES

0.01 µ	F.	 2/6 ea	ach [	0.5	F.		3/6 e	ach	
	,,	 2/6	,,	1.0	,,			,,	
0.00	,,	 2/6	,,	2.0	,,		5/-	"	
0.04	,,	 2/6	,,	3.0	,,		8/-	,,	
0.05	,,	 2/6	,,	4.0	,,		10/-	,,	
	,,		,,	5.0	,,	***	12/-	"	1.00
0.125,	,	 2/8	,,	6.0	,,		14/-	,,	
	,,		,,	7.0	.,,		16/-	"	To
	,,		,,	8.0	,,		18/-	22	order
	,,		,,	9.0	,,	+	20/-	,,	only
0.4	,,	 3/3	,,	10.0	29.	•••	22/-	,, )	

# Dubilier "Dubilicon"

A Multiple Condenser of Maximum Capacity 0.011 pF



THIS condenser provides eight small condenser units in one case. The two terminals of each condenser unit are soldered to a pair of "Clix" sockets mounted on the lid of the condenser, and the capacity of each condenser unit is engraved on the lid between the pair of sockets forming its terminals. The whole unit is enclosed in a polished mahogany box with ebonite lid and for the experimenter and manufacturer is an indispensable unit. The extremely large number of capacities obtainable by series and parallel combinations is obvious and the usefulness of such a "standard" needs no emphasising. Full instructions for use and various methods of obtaining numerous combinations are described and illustrated on our leaflet A.18, a copy of which is enclosed with every "DUBILICON."

Price 30/- Each

# The "Ducon"



It is for this purpose that the Ducon has been designed. It simply plugs into an ordinary lamp-holder and is then connected direct to the set.

There is absolutely no danger, as each Ducon is tested at 2,500 volts before being sold. It consumes no current and does not affect the lighting system in any way.

There are over 500,000 Ducons now in use.

N.B.—It should be noted that the Ducon is not suitable for use with Crystal Sets.

Price 10/- Each

# **Dubilier Anode Resistances**



On account of their importance in valve circuits, Anode Resistances have to be constant in value and absolutely stable in operation.

They must be able to carry the normal anode current of the valve for prolonged periods without overheating and consequent changing of resistance value.

Dubilier Anode Resistances are all tested at a D.C. Voltage of 200 Volts and are, therefore, thoroughly reliable up to that voltage. For voltages above 200, however, a different form of resistance must be used.

They are supplied complete with holder and terminals as illustrated, and are made with the following values:—

20,000, 30,000, 40,000, 50,000, 60,000, 70,000, 80,000, 90,000 and 100,000 ohms.

Price 5/6 Each

# Dubilier Duwirohm Resistance



WIROHM" Wire Wound Anode Resistances are constructed with a special type of non-inductive winding which permits of the resistances being able to carry a potential of several hundred volts with safety. These resistances are therefore admirably suited for use in resistance capacity coupled amplifiers, and in other types of circuits where ability to carry heavy currents and constancy of resistance value are essential for the efficient working of the apparatus. The resistances are graded to a close degree of accuracy and are guaranteed to remain constant indefinitely.

Experimenters will find these resistances indespensable in connection with experiments and other research needing high quality, reliable resistances.

20,000, 30,000, 40,000, 50,000, 60,000, 70,000, 80,000, 90,000 and 100,000 ohms.

Price 5/- Each
200,000 ohms ... Price 8

250,000 ,, ... ,, 9/9 300,000 ,, ... ,, 11/6

Holders can be supplied for the above at an extra cost of 1/6.

# Dubilier Grid Leaks



Duse in Radio Apparatus. They are of a metallic nature and are guaranteed to maintain an absolutely constant resistance value under all normal working conditions.

Dubilier "Dumetohm" Grid Leaks, 0.25, 0.5, 1, 1.5 and 2 megohms.

Price 2/6 Each

Dubilier Grid Leak Resistances of the familiar type are still supplied in values of 3, 4 and 5 megohms. They are tested in the Dubilier Works at 100 volts D.C., which voltage should not be exceeded in use, and their stability and accuracy can be relied upon completely.

Like the Dumetohm Resistances they are suitable for use with

the Dubilier Type 600 and 610 Mica Condensers.

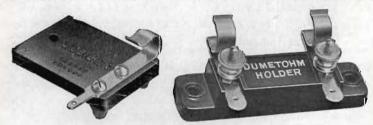
Dubilier Grid Leak Resistances, 3, 4 and 5 megohms.

Price 2/6 Each

Grid Leak clips for use in experimental circuits are also supplied separately.

Price 3d. a Pair

### Dubilier Grid Leak Attachments



THE soldering of connections to Dubilier Dumetohm Grid Leaks is a delicate operation liable to result in damage to the resistance. We therefore recommend the use of the Dumetohm holder (illustrated above) for cases where it is desired either to connect the resistance in series with a Condenser or to use it separately. The price of this holder is 1/-.

The Dubilier Grid Leak Attachment, illustrated above, is intended to be used when it is desired to connect a Dubilier Grid Leak in series with a Dubilier Type 600 Mica Condenser. The right-hand screw holding down the Condenser serves also to hold the Attachment in position, and the Grid Leak is then simply clipped in to the series position. The price of this Attachment is 6d.

# Dubilier "Duvarileak" Variable Resistance

(Patent Nos. 236975 and 246325)



THE Dubilier "Duvarileak" Variable Grid Leak resistance has been developed as the result of research work extending over a period of 3 years.

The resistance material employed has an extremely hard surface so that the wear on it, due to the rolling contact is negligible. Consequently the resistance has a permanence of adjustment which enables it to be set to a given resistance value on every occasion by means of the graduated scale provided.

This instrument is arranged for one hole fixing and is easily mounted

to the panel.

0

Price 7/6 Each

#### THE

#### Dubilier "Duvolcon" Volume Control

(Patent Nos. 236975 and 246325)

THE Dubilier "Duvolcon" is similar in appearance and in method of fixing to the Duvarileak illustrated above.

It is intended for use as a means of controlling the volume of sound from a loud speaker, or, alternatively as a means of controlling the reaction in a radio receiver.

Price 7/6 Each

B

The

## Dubilier Vanicon Variable Air Condenser



THE normal requirements of variable air condensers are chiefly accuracy, stability, and positive connection to the moving plates. The accuracy of a condenser depends on the correct design and spacing of the plates to a predetermined standard, and on the proper testing and calibration after assembly. A very high degree of accuracy is achieved in the Vanicon by these means, and also by the use of a new type of end plate, which is carefully shaped to reduce to a minimum the dielectric losses, thus giving the highest possible operating efficiency.

Positive connection to the moving plates is secured by using a flexible phosphor-bronze strip, and safety stops are fitted to prevent damage to this strip, as well as to safeguard the plates and preserve the calibration of the instrument.

The new Vanicon is fitted with feet, which can be seen to the right of the illustration. This enables the condenser to be used horizontally if required. (See page 23 for illustration of a condenser in this position).

Capacity		Price (co	omplete with Vernier	.)
0.00025 mfd.	 		17/6	
0.0005 mfd.	 		22/6	
0.001 mfd.	 		27/6	

The

### Dubilier Double "Vanicon" Variable Condenser

(Patent No. 241661)



ALL Wireless Experimenters will appreciate that, in a circuit employing two stages of Tuned Anode H.F. Amplification, simultaneous tuning is almost essential. Normally, however, this is very difficult to secure, and it was to meet this special requirement that the Dubilier Double Vanicon was introduced.

It is an air condenser divided, in effect, into two separate but similar sections, both having the same maximum capacity and both being controlled by the same knob and spindle.

Each section is connected in one of the Tuned Anode circuits, which can then be tuned simultaneously as readily as though one circuit only was being tuned. Any slight discrepancy which may exist in the capacities of the two circuits can be overcome by means of the balancing plate, which is controlled by a small pilot knob above the main knob.

Capacity of each side, 0.00025 mfd.

Price 25/6 Each

(complete with balancing plate)

#### The

### Dubilier "Duwatcon" Variable Condenser

(Patent No. 241971)



A MONG the many specialised requirements of the Wireless Experimenter—and also of the average amateur—the need undoubtedly exists for a condenser designed to give an unbroken tuning range when a "change-over" is necessary from series to parallel working.

The Duwatcon has been specially designed to overcome this difficulty, and in consequence gives a much greater wave-length range without changing coils.

This wide wave-length range is its most important feature, and is secured by setting one section of the vanes at an angle to the rest, as shown in the illustration.

The standard Vanicon features are incorporated in this condenser—i.e., Phosphor-bronze strip connection to moving vanes, safety stops, etc.

Capacity 0.0007 mfd.

Price 30/- Each

# Dubilier "Vanicon" Square Law Condenser



THE Dubilier Square Law Condenser has been very carefully designed to give a real square law effect, and it is not an instrument whose calibration curve is merely slightly flattened.

Like the other Vanicon Condensers, the Dubilier Square Law has set the standard of reliability, accuracy and stability for instruments of this type, and the new design of end plate which has been recently introduced has the effect of enhancing these qualities.

In its new and improved form, it is provided with special feet which enable it to be used equally well in an upright or a horizontal position, as seen in the illustration.

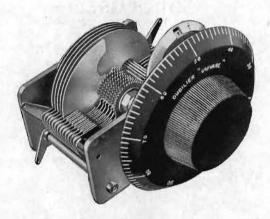
Positive connection to the moving vanes is of the standard Dubilier pattern, and the usual safety stops and vernier are also incorporated in the design.

Capacity		Price (complete with Vernier)			
0.00025 mfd.	 		17/6		
0.0005 mfd.	 		22/6		
0.001 mfd.	 		27/6		

#### The

### Dubilier "Univane" Condenser

(Patent No. 247365)



THIS new type of variable condenser provides the electrical equivalent of a mechanical vernier gearing throughout the full range of the condenser, but it does this without the disadvantages attendant upon the ordinary variable condenser with a single movable vane to give vernier tuning.

The condenser is so designed that this desirable feature is accomplished by a simple arrangement, the rotation of the knob of the condenser moving only one vane of the condenser at a time. As soon as one movable vane has been rotated into position where it interleaves with the fixed vanes, a second vane is picked up and is rotated into position as the knob is turned. Thus the full movement from minimum capacity to maximum capacity requires several complete revolutions of the condenser tuning knob thus enabling exceptionally fine tuning to be obtained. The number of times that the knob has been rotated is shown on a small auxiliary indicator attached to the front of the instrument and in close proximity to the dial. By means of this indicator a permanent log of every station heard may be kept for future reference.

The "UNIVANE" is suitable for use in all types of radio receiving sets, and is an essential component where fine and accurate tuning is required.

Maximum capacity 0.0005 μF.

Price 25 - Each

# The "Dubrescon"



PRACTICALLY every wireless amateur has on more than one occasion tried to put a valve the wrong way round in its socket, and thus shorted the filament across the anode and grid sockets. The H.T. voltage has at once burnt out the valve—and it is an accident that is very difficult to guard against.

As a safeguard against this unnecessary Valve destruction, we have brought out the "Dubrescon," illustrated above. It is a special accessory that should be fitted permanently in one of the H.T. Battery Leads. It then makes a sudden rush of H.T. Current impossible, while at the same time it does not in any way interfere with the passage of the H.F. currents. It should be noted that it is quite permanent, and is *not* a fuse.

The "Dubrescon" is very like a large Mica Condenser in outward appearance. It is  $4\frac{1}{2}$ " long and  $\frac{3}{4}$ " deep, and can easily be accommodated on the experimenter's table or at the back of the panel, or elsewhere in a wireless set.

The price of a "Dubrescon" is only 6/-, and when one considers the saving of valves by using it, its value is unquestioned.

Note.—Where more than four valves are in use it is advisable to use two "Dubrescons."

Price 6/- Each

#### The

# "Minicap" Anti-Capacity Switch



T is generally recognised that the employment of switches in wireless receiving sets usually involves the introduction of undesirable capacity effects between the switch contacts.

It is to avoid these stray capacities that the Dubilier "Minicap" Switch has been designed. From the illustration it will be seen that the switch is arranged with the terminal strips placed edge to edge, thus giving minimum capacity surfaces. The terminals have substantial tags for soldering, and the frame is solidly constructed of a special metallic alloy. The strips are firmly screwed to two ebonite blocks, and the contacts are of the self-cleaning rubbing type. The whole switch is very well finished and suitable for panel mounting.

The Minicap, which is a double-pole double-throw switch, is useful in all circumstances as a general purpose switch, including use as a Reversing Switch, Series Parallel Switch for Aerial Circuit, Circuit Change-over for valve receiver, control switch for both H.F. and L.F. Valves, and Wave-length control switch (simultaneous control of tuning range and reaction).

Price 8/- Each

# Dubilier Mansbridge Variometer

(Patent No. 224976)



THIS is an entirely new Dubilier product, and it is designed to give a far more compact, reliable and accurate variometer than any that has hitherto been sold These qualities are guaranteed not only by the name Dubilier but also by that of Mr. G. F. Mansbridge, the well-known originator of the Mansbridge Condenser.

The Variometer is of the flat type with four D-shaped coils, two of which are rotated in respect to the other two by means of the knob, thus varying the coupling between them. Links are provided for series or parallel connection of the coils.

Connection to the moving coil is of the positive type that has been standardised in the series of Dubilier "Vanicon" Variable Condensers—namely, a phosphor-bronze spiral mounted on a bobbin of highly insulating material.

The scale is graduated from 0°—180°, and the instrument is suitable for receiving all the British Broadcasting Stations.

In addition to ordinary crystal and valve set reception, the Dubilier Mansbridge Variometer is useful for buzzer and heterodyne wave meters, tuned anode receivers, etc., etc.

The Dubilier Mansbridge Variometer

Price 12/6 Each

#### Accredited Agents of

#### DUBILIER CONDENSER CO. (1925) LTD.

#### BRITISH ISLES

Aberdeen

Thomson & Brown Bros., Ltd., 74, Huntly Street.

Belfast

B.N.B. Wireless, Ltd., Gibsons Buildings, Castle Street.

Birmingham

S. Wilding Cole, Ltd., 116, Snow Hill.

Bradford

F. Riddiough & Son, Westgate.

Cardiff

Brown Bros., Ltd., 86/88, Adam Street.

Dublin

Brown Bros. (Ireland), Ltd., Dunlop House, Lower Abbey Street.

Dundee

Thomson & Brown Bros., Ltd., 2c, King Street.

Edinburgh

Thomson & Brown Bros., Ltd., 126, George Street.

Glasgow

Thomson & Brown Bros., Ltd., 65, Mitchell Street.

**Ipswich** 

Mann, Egerton & Co. Ltd., Major's Corner

Leicester

T. H. Wathes & Co., Ltd., 86/88, High Street.

Liverpool

Pulford Bros., Ltd., 102/110, White-chapel.

Lowestoft

Mann, Egerton & Co., Ltd., 97/99, London Road, South.

Manchester

Manchester Radio Co., Ltd., 155, Oxford Road.

Newcastle-on-Tyne.

Thomson & Brown Bros., Ltd., Carliol Street.

Norwich

Mann, Egerton & Co., Ltd., 21/23, King Street.

Nottingham

Pearson Bros., Ltd., Regent Chambers, Great Market Place.

Southampton

Brown Bros., Ltd., 33, Carlton Crescent.

#### ABROAD

Australasia

Amalgamated Wireless Ltd., 97, Clarence Street, Sydney, N.S.W.

Belgium

La Radiophonie Belge S.C., 15, Rue de la Madeleine, Bruxelles.

Czecho-Slovakia

H. Steflicek, Na Vaclavce 31, Prague.

Denmark

Poul Petersen, Store Kirkestraede 1, Copenhagen.

Holland

Nederlandsche Seintoestellen Fabriek, Post Box 32, Hilversum.

Hungary

United Incandescent Lamps and Electrical Co., Ltd, Ujpest 4, near Buda Budapest.

Italy

G. Santarelli, Viale Amedeo 16, Florence.

Norway

Norsk Marconikompani, Drammensveien 42, Oslo.

South Africa

Burndept of South Africa Ltd., The Bank House, Corner Main and Harrison Streets, Johannesburg.

British General Electric Co., Ltd., Magnet House, Corner Loveday and Anderson Streets, Johannesburg.

Wireless Agency Ltd., Kodak House, Shortmarket Street, Cape Town.

Spain

Standard Electrica S.A., Avenida Pi Y Margall 5, Madrid.

Sweden

U. Salchow, Kl.V.Kyrkogata 12, Stockholm.

Switzerland

Societe Generale des Condensateurs Electriques, Fribourg.