Modern Radio Laboratories,
1131 VALOTA ROAD
Redwood City, Calif., U.S.A.

M-R-L GENERAL CATALOG

For Radio Experimenters

References: Dun & Bradstreet, S.F.
American Trust Co., Redwood City.

Estab. 1932

Effective Date
JAN 1963

Litho. in U.S.A. by M-R-L.

Use this Index and Save Time.

Sales to over 53 Countries.

Postage extra on all orders.
In California add Sales Tax.
Add Insurance 0- $10 10¢;
10.01-$50 20¢
Orders under $1 add 25¢ Service Charge, refundable on any $2 order later.

C.O.D. orders accepted if $1 or 25% (whichever is larger) accompanies order. No exceptions.

See SEC. X & MRL "Radio Flyer" for new items, changes, etc. into regular CATalog later.

Prices subject to change.

Please use CAT. number & description to prevent errors.

CATalogs are FREE. We appreciate 10¢ handling charge.

LET'S GET ACQUAINTED.

Hello - we're glad to meet you and we are very happy that you chanced to come our way. MRL also hopes you will stay with us for a long time. We'd like to work with you. After looking thru this CATalog you'll agree that we are in a position to help a Fan.

Elmer G. Osterhoudt, (EO), got started in Radio, in 1915, with broomhandles, wire and crystals. Got Ham license (6NW) in 1919. Spent 1920-23 at Sea as Radio Operator with RCA. Attended USC College of Pharmacy one semester but Radio drew him back! He then opened the Manchester Radio Electric Shop in Los Angeles in 1924. In 1928 he moved to Oakland and was in a Shop about 4 years. In 1932 he started Modern Radio Labs. to sell by mail entirely. Our Hi-Q Celluloid coils were also put on the market thru the Jobbers at the same time. Other minor experiences are shown on the inside cover of Handbooks, listed in Section A.

Mabel E. Osterhoudt, (the Mrs. XYL), has been closely associated with MRL since 1929. Her devoted interest and help has done much to keep MRL on an even keel and going strong. Her main interest is seeing that orders go out soon as possible. (You know a guy is inclined to lag??). She handles most of the literature, puts up kits and orders and does most of the Varityping and assembling of our literature.

Now, you'll ask "What does the OM do?" Well, he makes parts, writes up literature, handles correspondence, wraps orders, does the buying, bookkeeping, prints the literature and gabs with anyone who comes along!

Scope. Since 1932 Modern Radio Labs. have been foremost in recognizing a definite and permanent class of Radio Fans devoted to small set experimentation as a Hobby. This class has always existed- tho so many have failed to realize it. Not only the Neophyte - but into the Professional ranks and business - we find these Dabblers by the thousands. Our own lists attest to this.

(1) Crystal Sets. No longer is the Crystal set a kid's toy - it now has its own field of development. The large laboratories are now spending millions on the Diode, Transistor and other Xtal (set) experiments. This has resulted in countless developments and literature to revive the old lowly Crystal Set.

(2) 1 to 3 Tube Sets are also included in our field. We combine old, sensitive circuits with various new Hi-gain tubes.

In the 20's thousands of real Experimenters about exhausted the field of circuits. Few big improvements have been made in Radio since then, except FM and TV. Then, we had the circuits but not the tubes - the 24-A being the highest gain. Now, we work with these older, more sensitive circuits and add hi-gain tubes, of which there are some 15,000 types in the World. We list and sell over 50 different Crystal Set circuits alone. So, you see, there is no limit to the Small Set Field as a Hobby.

Radio is a clean Hobby and it keeps a fellow off the street. I've never heard of a "bad" boy that was a Radio Fan. Besides being instructive, it is very lucrative. TV and Radio Technicians make good money. On a small scale one can fix sets. Electronic plants always need Technicians. Ships need Operators. Our advice is to carry on your own job but do Radio on the side and you'll always have plenty of "pocket money." Some wire and sell our Radio kits and plans.

Also, everyone must start at the beginning.

Building small sets can become a life-time Hobby. Many of our Old Timers have been with us since 1932, and still going as strong as ever.

We find, by a rough count, over 250 items listed in our CAT. but not shown in other's. This is because we make many of them and you'll never find them listed elsewhere. Some items have been made by us for over 20 years.

When looking for items - use the Cross-index, on the other side. We try to keep it up-to-date with each separate revision or addition. If you keep on our Flyer list, you will get most of the changes as they occur. If Ur CATalog disappears - ask for one - 10¢ mailing cost appreciated.

Filling orders. We try to ship within 24 hours when possible. Shipments packed in as small box as possible to save postage. It may be shipped in 2 to save you postage. Any critical tube, part, set, kit, etc. is tested before shipping. Every cent is debited or credited on your card. We try to stay away from used parts.

By grouping several items the Parcel Post is lower. If ordering parts, kits, etc. you may add approximately 10¢ for the 8th zone, and less for shorter distances. We refund, or credit any balance, as you desire.

COD's. Send $1 or 25¢ deposit, whichever is larger, on COD's. A money-order fee of 15¢, or more, is added to C.O.D. charges.

Minimum order $1.00. A 25¢ Service Charge is added to orders under $1.00. This Charge may be applied later to any order for $2.00 or more.

Foreign Customers, living in Dollar restriction areas, write us for details on buying here.

Postage dues will be added to a bill - so put on plenty of postage if sending coins. Tape on light card with Cello. Tape.

HOW TO ESTIMATE PARCEL POST CHARGES (U.S.)

The post office charges a fraction of a pound as a full pound. For example, if the total weight is 5 pounds and 1 ounce to Zone 4, postage would be for 6 pounds

WEIGHT IN POUNDS	Local	1st & 2nd Zone up to 150 mi.	3rd Zone 150 to 300 mi.	4th Zone 300 to 600 mi.	5th Zone 600 to 1000 mi.	6th Zone 1000 to 1400 mi.	7th Zone 1400 to 1800 mi.	8th Zone Over 1800 mi.
2	.24	.33	.35	.39	.45	.51	.58	.64
3	.26	.38	.41	.47	.55	.64	.74	.83
4	.28	.46	.47	.55	.65	.77	.90	1.02
5	.30	.48	.53	.63	.75	.90	1.06	1.21
6	.32	.53	.59	.70	.85	1.03	1.22	1.40
7	.34	.58	.65	.77	.95	1.16	1.38	1.59
8	.36	.63	.71	.84	1.05	1.29	1.54	1.78
9	.38	.68	.77	.91	1.15	1.42	1.70	1.97
10	.40	.73	.83	.98	1.25	1.55	1.86	2.16
11	.42	.77	.89	1.05	1.35	1.67	2.02	2.34
12	.44	.81	.95	1.12	1.45	1.79	2.18	2.52
13	.46	.85	1.01	1.19	1.55	1.91	2.34	2.70
14	.48	.89	1.07	1.26	1.65	2.03	2.50	2.88
15	.50	.93	1.13	1.33	1.75	2.15	2.66	3.06
16	.52	.97	1.18	1.40	1.85	2.27	2.81	3.24
17	.54	1.01	1.23	1.47	1.95	2.39	2.96	3.42
18	.56	1.05	1.28	1.54	2.05	2.51	3.11	3.60
19	.58	1.09	1.33	1.61	2.15	2.63	3.26	3.78
20	.60	1.13	1.38	1.68	2.25	2.75	3.41	3.96
For Each Extra Lb.	Add 2c	Add 4c	Add 5c	Add 7c	Add 9c	Add 12c	Add 15c	Add 18c

AIR PARCEL POST RATES

ZONES	1, 2 & 3	4	5	6	7	8	U. S. Territories, Possessions and APO & FPO Addresses, 80c per lb.
1st Lb.	60c	65c	70c	75c	75c	80c	
For Each Extra Lb.	Add 48c	Add 50c	Add 56c	Add 64c	Add 72c	Add 80c	

U.S. THIRD CLASS
0 to 15 oz.
1½¢ oz.
Minimum 3¢.
Small packets
Minimum 6¢.

CANADIAN bills at face. Silver less 10%. Canadian mint stamps 25¢ max. per order. Canadian checks & money-orders in U.S. funds. Internat'l reply coupons 4 any amount.

INSURANCE
0 - $10 - 10¢
10- $50 - 20¢
50-$100 - 30¢

CANADA
3rd class.
1-2 oz. 4¢
2¢ each 2 oz.

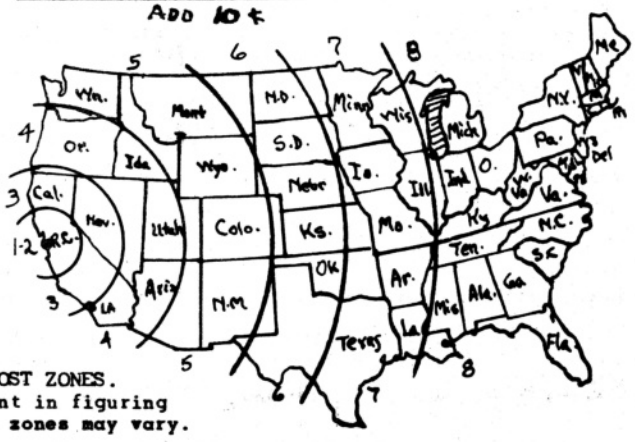
CANADA
Parcel Post
1 lb. 45¢
2 lbs. 67¢
3 lbs. 89¢

PARCEL POST C.O.D. FEES*

$ 0.01 to $ 5.00—30c	$ 50.01 to 100.00—80c
5.01 to 10.00—40c	100.01 to 150.00—90c
10.01 to 25.00—60c	150.01 to 200.00—$1
25.01 to 50.00—70c	*In addition to Postage.

MONEY ORDER FEES

From $0.01 to $	¢
From 1 to 10.00	20¢
From 10.01 to 100.00	30¢



PARCEL POST ZONES. Be lenient in figuring rates as zones may vary.

MRL Handbooks

An exclusive item: not obtainable elsewhere. They represent notes from our large library; our own experiments since 1915 & reports from hundreds of Fans.

HEADPHONES: OPERATION & REPAIR.

MRL Handbook No. 1.

C O N T E N T S.

This Handbook contains 33 detailed drawings to help you. The material has been collected over a number of years - and much of it cannot be found in the Radio texts, libraries, etc. Letters have been received from three of the leading phone manufacturers praising this Handbook.

Because most Fans buy one good pair of phones in a lifetime - it is a good idea to keep them in repair. Using phones, in poor condition, cannot give best results in DX reception, tone, etc.

The Handbook gives data on old as well as modern ones - and how to keep them in good order.

Some of the headings are Early phones - Diaphragms - Cords - Fitting lugs to cords - Fitting tips to cords - Re-magnetizing - Re-winding - Hooking phones to sets - Phones in series and parallel - Freak phone reception - Using phones as testers - Using phones as various types of magnetic speakers - Using phones as microphones - Batteryless telephones- Fixed coil phones - Modern telephone circuit- Miniature phones - Continuous current type - Fixed coil-acoustic phones - Balanced armature phones, as the Baldwins - Dynamic phones - Piezzo-electric crystal phones.

As usual, we try to add additional details to make our Handbooks more interesting.

When phones were more expensive and harder to get- our shop used to re-wind and repair a lot of earphones. Over a period of time one can learn a lot about phones, which is quite a subject in itself. Eventually labor became too high to continue repairing phones. However, this HB can save you quite a few dollars in simple repairs that you can easily make.

A later kink, that will interest you, may be added to the HB. Years ago we tested super-sensitive phones by touching the tips together to get a click. Now a different plating is used on the tips which does not produce the click. It is not that the phones are less sensitive but the new plating doesn't click. This is from the Trimm Laboratories.

MRL HB-1. 2 oz. postage.... 50

MRL #2 and 2-A LONG DISTANCE CRYSTAL SETS.

MRL Handbook No. 2.

C O N T E N T S.

Many have acclaimed this the "World's Best DX Crystal Set." This HB shows all details for building this wonderful set.

You may refer to CAT. page K-1 for more details on the kit.

HB-2 shows how to build both the #2 2-dial set and the #2-A single dial set. They're the same circuit but the different types of condensers make a different panel and wiring layout.

Some of the points covered in "Building the Set" are the complete panel front, rear and side layouts for both sets, all drawn to scale and positioned for best results under many conditions. Other details on How to check parts - Mounting condensers - Mounting switch levers and other parts - Soldering - Wiring them with step-by-step plan - Best way to mount coil - How to wind the coil - Mounting the coil - Mounting the set, etc.

In "The Antenna System" you'll find Theory- Directional effects - Placing the Aerial correctly - Kind of wire and insulators - Erecting the Aerial - About the leadin - Multi-wire Aerials - Temporary Aerials- Ground leadin - Best grounds - Counterpoise - Lightning arrester, etc.

Under "Operating & Testing" we have covered Logging - Daytime reception - Fading - No signals - Freaks - Phones & condenser - Using speakers - SW reception - Best crystals & catwhiskers- Use of wave traps for interference.

"Theory of Circuit" covers The signal - Aperiodic circuits - Coupling - Auto transformer - #2 circuit - Primary condenser.

"Records by Locations" list 186 good DX reports from all over the U.S. and Canada on pages 20 to 24. Also from Australia, Bahamas, Hawaii, Philippines. In our files we have hundreds not listed in the Handbook.

We have really gone overboard with this HB. So many things are explained that may be adapted to other sets than the #2. A short discussion of plug-in coils for Xtal sets is given, to reduce dead-end losses on Short waves.

The proper way to operate a Carborundum Xtal at its peak DC voltage is explained.

You will enjoy it and should have it on your shelf.

MRL HB-2. 2 oz. postage..... 50

CRYSTAL DETECTORS.

MRL Handbook No. 3.

C O N T E N T S

The data in this HB has been collected over a number of years and was almost impossible to obtain. Much of the older material was kept secret by the larger companies. Before the advent of tubes, a large number of minerals and combinations were tried - always looking for a better one.

The number of titles will give you an idea of the scope of this HB. Under each title we have attempted to give the chemical formula, common name, description, source and distribution, sensitivity, catwhisker type to be used and any other interesting data for each.

The "Quick Reference Chart" gives name, formula, class of chemical, active element and if a battery may be used in series.

"Trade Names" gives all we had on hand - and shows the duplicity of brands on the market.

A simple discussion of Diodes and Transistors is given, as so much now is very technical.

This Handbook can lead you into experiments with other combinations of minerals, etc. once U see how they detect signals.

MRL HB-3. 2 oz. postage..... 50

M R L Handbooks, continued

All are handy 5½" x 8½" pocket size. Index is on the cover to make it easier for reference. On the back is a synopsis of some other Handbook in the series to make them more useful.

MRL 1-TUBE D.C. ALL-WAVE SET.

MRL Handbook No. 4.

C O N T E N T S.

This is one of our best MRL Handbooks.

The One-tube set, it describes weighs but 12 ounces. Literally hundreds of them have been sold to satisfied customers, so the rig is not an experiment on the market.

The circuit is simple, and is easy to assemble and wire. The DX ability is due to the layout of the proper parts, Antenna condenser, and little kinks we have learned during its sale the last 13 years.

Complete parts lists are given in detail. While we prefer certain parts, the whole list may be purchased at any good Radio Parts store.

On its 24 pages we have attempted to show all drawings in full size, so measurements may be made directly. It is easy to lay out the panel, base, etc. by just removing the staple from the Handbook, and placing sheet directly on the flat surface. A center punch is then used to mark the hole centers, for easy layout.

Our new system of systematic wiring, showing starting points, etc. will help the novice. One may use the schematic or pictorial diagrams as he wishes. Details are given, as we progress, why certain methods are used.

Complete data for winding all the coils from 20 meters up thru the Long Wave band of 830 meters are shown.

7½ pages of "Performance Reports" are given. These show, in condensed form, and alphabetically by Countries, States and Cities, some of the best results we have heard about. Besides the station call letters, we have figured the approximate airline miles, which run up to 12,000. Now and then a Fan reports some special kink, or change he has made and found useful.

MRL HB-4. 2 oz. Postage..... 5¢

CRYSTAL SET CONSTRUCTION.

MRL Handbook No. 5.

C O N T E N T S.

There are few Beginner books on Radio that really begin. Most of them start half way up the ladder. We have had so many inquiries about the simpler forms of Radio - that this Handbook is a necessity. Symbols accompany all drawings to learn parts.

It is sectionalized so you can easily refer to it without reading the whole book.

It starts by explaining the use of Panels, and especially as concerns Crystal sets. Lots of hints on processing, etc.

Cabinets - two kinds that are easy to build - Also finishing.

You will find lots of data on Coils as so many types may be used in Crystal sets. Info. on forms; winding; tapping; finishing; large vs small; dead-ends; jumble-winding; solenoids; Loopsticks; sliders; couplers; AC-DC.

Various types of Condensers R treated, from mica to bypass, as all may be used. Explains condensers in series, parallel, etc.

Crystal stands is also a big field of experimentation and you will get some good ideas here. Pressure; fine vs large wires; remaking present stands; mounting Diodes, etc. conveniently.

Semi-conductors as detectors, Diodes and Transistors are well covered. How tubes and Transistors are similar and dissimilar. Data on high-freq. Transistors.

Headphones - the best types & some kinks in use. Tone; ear cushions; series vs parallel; crystal phones; repair; etc.

In Primary and Secondary circuits the HB really gets going. Aperiodic circuits; series and parallel tuned; sharp & broad.

Loose-coupling and sensitivity are most important. Lots of good data on making Couplers, etc.

Two Transistor amplifiers are shown - easy to build.

8 layouts for panels given.

Complete assembling data and a soldering iron setup. Quick way to arrange panels.

Discusses problems for getting long distance reception.

MRL HB-5. 2 oz. postage 5¢

HOW TO MAKE COILS.

MRL Handbook No. 6.

C O N T E N T S.

You will find lots of good information in this Handbook. It contains 46 drawings and 3 valuable charts. A lot in a small space but covering it well.

It leans toward the Novice or Experimenter and shows him how to make coils easily without a big investment in equipment. No real complicated winder is used and most of them can be made up from parts around the average home or shop. Commercial-looking coils may be wound using these simple methods. Over many years we have run into many kinks in the field of coil building.

From the above titles you can see the extent of coils covered. Various types of low-loss H.F. and transmitting coils are shown - with highest efficiency.

Low-loss basket and spiderweb coils are given, and you'll have fun making them up. There are lots of uses for them - especially in long distance work.

Two methods are given for your making honeycomb coils. Other specifications as to turns, tuning range, inductance, distributed capacity, resistance, etc. from 25-1500 turn coils. They are useful as standards in these values in your Lab.

All our plug-in coil data is shown - so you can wind them yourself. Over many years we have experimented to get the best results from balance of turns, wire, spacing, etc. Our testimonials on DX attest to our being right on this subject.

Toroid coils are covered to some extent. They are now being made by the thousands in some plants. A simple method of winding them for your receiver.

Multi-layered coils are covered in detail. A chart gives many values useful in figuring turns.

Link coupling will help you in selectivity problems.

Coil mountings are covered.

MRL HB-6. 2¢ postage..... 5¢

M R L Handbooks, continued

EXPERIMENTS WITH MAGNETISM AND COILS.

MRL Handbook No. 7.

C O N T E N T S.

We have attempted to explain a lot of the peculiar actions of Magnetism, in relation to coils. Over 30 experiments may be conducted with very little equipment. There are also other drawings that help to make it more interesting reading.

Coils work under very definite rules. As we experiment with Radio we are apt to take a lot for granted. If we know some of the simpler rules - it is easier to go forward. This Handbook goes into these important rudiments of coils and their operation. It is a companion for #6 Handbook.

In early Radio days the writers had very divergent theories on Magnetism and Coils. We have attempted to cover some of these differences and bring the subject up-to-date.

Much data is given on magnetic materials. It explains what are best for magnets, coils, chokes, transformers, etc. Latest core data is given in a chart.

Quite a bit is given on various types of low-frequency audio and power transformers.

A lot is explained about the shielding of parts with magnetic and non-magnetic materials and which are best and why.

Details on figuring coil inductances in series and parallel are explained. You can also rig experiments so you can "see" the effect of counter emf.

Lots of material on AC resistance and what it comprises. It tells why good coils work better and what to look for in making better DX coils.

Details on making a simple galvanometer, contracting helix, repulsion coil, current-wave tester, and other gadgets.

We are sure it will be as interesting to you in reading it as it was our writing it. Add it to your MRL Handbook collection.

MRL HB-7. 2 oz. postage..... .50

Circuits used in MRL Handbooks are all tested; we don't just copy material from other sources to fill up space. Many additions are made to our original and you may combine them for new ones.

MRL 20 CRYSTAL SET CIRCUITS.

MRL Handbook No. 17.

C O N T E N T S.

It is hard to say how many thousands of this Handbook we've sold to satisfied Fans. And many Engineers, and other professional men build these sets in their spare time.

All the circuits are practical and have been tested over a long period of time. We do not copy plans as so many of them don't work right. Most of these plans are original with us. Hundreds of good DX reports have been received by us from Fans.

The schematic, pictorial and layout diagrams are clearly made up. You don't have to be an expert to build any of them. They run from simple sets to one of 5 controls. Diagram parts are all numbered for simplicity.

Every inch of space is filled with useful information.

Testimonials from thousands of customers attest the appreciation for this set of plans. Our Blueprint #17 has been completely re-written. It incorporates lots of kinks, changes and experiences represented by many hours of experimenting.

We have added many sketches of panel layouts, variations, and details not found in our original plans. Also, any semblance of tube rigs have been replaced by purely Crystal sets.

Circuits are shown that will stimulate the Beginner or ones that will give the Old Timer a good run for his money.

Parts lists are shown, all of which may be easily obtained. A good part of them may be home-constructed.

It is a well-known fact that to start Radio right - the Xtal set is the first step. Learning these, the future steps are much facilitated.

MRL HB-17. 2 oz. postage... .50

MRL 18 CRYSTAL SET CIRCUITS.

MRL Handbook No. 25.

C O N T E N T S.

Crystal circuits in this Handbook are all entirely different from HB-17. Like #17 - thousands have been sold to Experimenters. Many are used in Radio classes & clubs. The material has been collected over a number of years & all circuits have been completely worked out and tested. There are no tubes used. Complete part lists are given with each.

Some of the special features of HB-25 are: #19 Pocket Radio 3" square, that IS selective. #22 DX Marvel that really gets the DX. #37 Push-button set tunes like an Auto radio. The #28 Plug in coil Crystal set has a 6000 mile DX record on Short waves. #31 Police call crystal converter will work ahead of any tube set to get Police and Amateurs on your big set. #34 Wired wireless Crystal works in conjunction with a tube oscillator to talk to your neighbor. #38 Xtal booster is a novel rig to increase volume on a crystal set. Various notes of interest are added for your enjoyment.

The ONLY way to start in Radio is by building some Crystal sets and then go to 1-tubers, etc. This HB will give you a good beginning. It gives good, clear diagrams and a chart to show you what symbols mean. All details are worked out.

One may spend their lifetime with Crystal experimenting and always learn something new. Xtal Diodes are now being made for HF sets as their characteristics cannot be matched by tubes. You will enjoy working with them.

MRL HB-25. 2 oz. postage... .50

M R L Handbooks, continued

Where can you find a line of instructive Radio Handbooks at this price? By our system we can produce them - while others must make large volumes at hi-prices. Buy parts for the difference.

RADIO KINKS and QUIPS.

MRL Handbook No. 8

C O N T E N T S

The scheme of this Handbook is different from others we have written. Pages are alphabetically arranged so you can easily find the kinks, so no need to thumb thru the whole book. 36 drawings help to explain. Parts lists are furnished when needed.

From piles of notes we have selected kinks that we feel are not common to other publications and many that have been asked. Am sure you will find many that are interesting to you.

A few of the items of interest are: figuring natural wavelength of an Aerial in a hurry - an adjustable Ant. system - 5 meter T Aerial- inside doublet for apts. - use of chokes - choke substitution - winding Crystal coils - band/spread condenser - how to get best Crystal set reception - Transistor amplifier for Xtal - HF and LF BC station tuning- 110 line hum control - best DX operation requirements - counterpoise - ground waves - substitute grounds - hum & noise control in Hi-Fi - permanent Hi-Fi needles - speakers in Hi-Fi - panel drilling hints - proper wiring - dials - shielding- care of phones - mike from phones - body capacity in phone cords - complete diagram for AC-DC set without shocks - filaments - resistor substitution box - improving regeneration - motorboating - shop operation - drilling - universal output trans. chart - baffles - tone - fixing speakers- 2-way 110 switch - DX series-parallel switch- boosting TV stations - TV Ant. data - testing - simple signal tracer - transformer data - Transistor feedback - Transistor battery - Transistor wavemeter - variable grid leaks - many others.

MRL HB-8. 2 oz. postage.....50

MRL RADIO NOTES No. 1.

MRL Handbook No. 9

C O N T E N T S

This Handbook is chockfull of good information for the Radio Fan. As the titles show - there is something of interest to all the Experimenters.

As MRL "Radio Builder" No. 34 is out of print - we decided to completely do it over into a new Handbook, All articles have been expanded and put up-to-date in every way possible.

There is a DC TRF Stage that may be used on any set to boost DX signals and sharpen the set. Complete details with panel and base to scale and parts list.

A discussion of the MRL Type D Antenna Coupler whereby you plug SW coils inside to get sharper tuning and balancing the Aerial.

MRL #10 DX Crystal Set is well covered for present owners and a few logs from others.

On Erratic SW Reception - we have broadened the original into an useful discussion of DX.

Facts about Enameled Wire has presented quite a discussion of this seldom-heard subject. How it is made, handled, and its advantages and disadvantages.

A lot of info. on Guy Wires and Insulators, and how an Antenna mast can best be set up.

A Simple Long Wave Booster is described - with panel layout.

A greatly enlarged article to 3 pages on AC Filament Supplies, past and present. Series and parallel strings & several types of power supplies are given.

Speaker Hints are more than that. Almost two pages of data.

The Beginner in Radio - a completely new article. Over a page of what he runs into - remedies.

Blue Glow in Tubes - about 1½ pages on glow and gas.

Shoot your order in now.

MRL HB-9. 2 oz. postage..... .50

FACTS FOR CRYSTAL EXPERIMENTERS.

MRL Handbook No. 10.

C O N T E N T S

Why Crystal Sets? - gives a lot of reasons for their use. Thousands of listeners depend entirely on their use - believe it or not! Tone fidelity, DX reception and other points are covered. The simplest set is shown, along with the most modern type of Crystal set.

Pocket Radios, using Diodes, are explained - and advising you on pitfalls in their advertising that catch thousands a year.

De-modulation and Rectification are explained in detail, in a simple manner that WE all can understand, This is also useful to the Amateur.

Theories of Detection - and there are many. All explained in detail - so you can use your own judgment which is best. Also an explanation of Selenium and Silicon rectifiers, Simple thermocouple experiments are shown. Principles of thermo-coupled ammeters. All about the formation of crystals and X-ray tests. The Hole and Hall theories are here.

Some Early Xtal Detectors, or Cymoscopes, from 1874 up to the present are shown- and many most of us never heard of before.

Good Care and Operation of Xtl Detectors is very important for best results. Mounting Xtals and the best kinds of catwhiskers to use. A discussion of stands - & many types are shown.

Crystal Efficiency and the Characteristic Curve shows interesting methods of testing and plotting graphs. Effects of battery use on Crystals. Discussion of the proper use of Carborundum Xtals and batts. as well as use of dual Carborundums.

Some Modern Crystal Diode Applications shows latest methods of manufacture- with voltages up to 1500 on a Silicon rectifier Diode. Several types of catwhisker shapes are shown. Photo-Diodes, grown and diffused junction Diodes, 2 million to 1 ratios.

Resonant Circuits covers Xtal sets affecting other sets, etc. Also latest QRM Coil experiments on BC and Short waves.

MRL HB-10. 2 oz. postage.... .50

MRL "RADIO BUILDER & HOBBYIST"

INDEX FOR RB&H #25 thru #39.

This is not a cross-index, so please glance thru it all. The first is the page number, and the second is the issue number.

Our **RB&H** has come a long way from the #1 "MRL Oscillator" in 1933. We originally used an open cylinder duplicator, for a few bucks, which could crank out a few hundred copies per day. (OVER)

MRL "RADIO BUILDER & HOBBYIST"

MRL "Radio Builder & Hobbyist" is being discontinued on a subscription basis. It is necessary that we devote our time to MRL Handbooks and other literature instead.

BACK ISSUES #41-42-43-48-49 will still be handled at 25¢ each, plus postage.

BACK ISSUES #25 thru 40 will be discontinued when the present supply runs out. Until then, we can supply them at 15¢ each, and postage. Material in them will be combined and made into future MRL Handbooks as they run out. So, if you want them at the low price of 15¢ each - get your order in real pronto!

RB-34 has already been discontinued - and contents, plus a lot more, are contained in our new MRL Handbook #9 "MRL Radio Notes No. 1" at 50¢ each. (A-4) Also others are getting low now.

COMPLETE SETS OF "RB&H" of 20 issues sell for $3.50, plus one lb. postage. If any are out- you will be given credit for the difference.

Following are the contents not shown on CAT. page C-1.

MRL RB&H No. 41, at 25¢ & post.

MRL RB&H No. 42, at 25¢ & post.

MRL RB&H No. 43, at 25¢ & post.

MRL RB&H No. 48, at 25¢ & post.

MRL RB&H No. 49, at 25¢ & post.

MRL RB&H No. 40, at 15¢ & post.

Here are contents of vol. 1 & 2. 25¢ each, plus postage:

EXPERIMENTERS' ELECTRONICS and SCIENCE

CONTENTS *No.1*

CONTENTS *No.2*

BACK ISSUES of E-S #1 and 2 will still be printed at 25¢, plus postage. (Note contents) Also back issues of RB&H as per CAT. pages C-1 and 2.

MRL Detail Prints (DP)

A DP gives added (detailed) information on our plans of HB-17, 25, etc. All plans tested out in our Lab. before completion. Lots of magazine plans do not work; but ours will! DP's have consistently sold for over 25 years, and enough testimonials have been received on them to fill a book! Lots of time has been spent to make them complete and useful. Many of our circuits are original, and not found in other publications. Plans are revised when time and conditions permit.

Most DP's give layout to scale as well as parts list, coil data and winding, wiring hints, kinks and variations from the original circuit, operation, and a pictorial diagram if space permits. Printed on good, white paper, 8½ x 11. Easy to read and follow.

DP FILE CAT. 5-1 DISCONTINUED.

MRL DP FILE #1.

The following 15 DPs are neatly bound, keeping them neat and easy to find. On the front cover is a complete cross-index for quick reference. We have also added an interesting 1½ page article on "Static" to the cover. All DPs in the file are photo-lithographed. It takes months to make all the units with their variations. A welcome addition to any Radio library. We suggest a copy for every Radio class or club. You save 60¢ by buying the complete set of plans. Following R the plans in this file.

DP File #1 Index. Sold at same price as DPs. Useful in filing if you already have some of the DPs. Cross-index gives all details. A big 1½ page article on "Static" is included. It was revised and reprinted from early issues of MRL "Oscillator" and "Radio Builder" now out of print - and well worth reading.

#1 MRL #37 Push-button Crystal Set. Plan shows schematic; pictorial front & rear panel views; how to mount trimmers; coil data etc. We have also added a SPST switch to increase the range, as different from circuit in HB-25. Just throw a lever to a station.

#2. MRL #33 Selective Crystal Set. Shows simplest layout and all is mounted on the panel. It gives detailed drawing of all connections in pictorial. Also shows hi-gain connections. You have a variable selectivity control and other features.

#4. MRL 15 1-tube DC Circuits. A plan sold usually thru our ads that shows 15 good tested plans on a page. Also complete parts list. Shows Lo-B cir.; variable screen grid; reversed Electron-coupled; space charge with 6 v. B.; super-regenerative; reflex; long wave; etc.

#11. MRL Type D Antenna Coupler shows full-sized drawing of the unit. Also under-base view for condenser mounting; use a vertical or "L", Doublet; Zeppelin; complete mounting instructions; several formulas for building Aerials; theory. (See CAT. E-4)

#12. MRL 2-stage Transistor Amplifier. This is a well-worked out circuit using 2 Transistors as power amplifiers in a simple circuit. Signal goes into a 4" PM speaker mounted on the panel. A 6.3 v. fil. trans. and filter furnishes all power. This unit may be hooked across phone connections on a Xtal or tube set & bring out those weak ones. Phone jack cuts out the speaker.

#13. MRL All-wave Vario-coupler. Shows complete constructional layout in simple drawings of all details; use in Crystal set; in Australian regen. cir.; in BC band set; a good Shortwave circuit; theory. (See CAT. E-4).

#14. MRL Transistor Small Set Amplifier. Just made up. All details for building a slider Xtal set, with excellent selectivity. Also added is the PNP Transistor Amplifier, which works on 1½ to 6 volts of flashlight cells and operates a speaker. Volume control used. May be attached to a 1-tuber, or any Crystal set.

#22. MRL #2 Long Distance Xtal Set. After all these years - the best way to lay it out. Showing front, rear, side and wiring views of our Old Reliable DX'er. This is the one we advertise a record of 5800 miles in our ads. Up-to-date details we now use.

#22-A. MRL #2-A Long Distance Set. This is the same circuit as the #2 (DP-22) but it uses a 2-gang condenser with a different panel layout. Reports are about equal to the #2 as the condenser automatically adjusts itself. Is very easy to build and makes a remarkable set for local and DX. Same selectivity switch as #2. Over 5000 mile reports. One fellow in Canada plays Moscow every evening on this set.

#23. MRL #8 Crystal Set. One of our very selective sets. Uses a different principle than most Xtal sets. You can't go wrong on this set. Pictorial and wiring diagrams give details. Distances up to 1800 miles covered.

#26. MRL No. 1 Crystal Set. Our original Xtal set, whose DX and performance got us into the M/O business. Many records over 1000 miles. Uses MRL QRM Coil for trapping stations. Back panel view shows clips for different condensers. Easy to assemble and wire. Selectivity controlled. It gives very loud signals.

#28. Radio Symbols. Approximately 157 old and new ones. Big job to get it up. Hang it on your wall for quick reference. Looks much better photo'd than mimeo. Many you probably never saw b4.

#30. Proper Aerial & Ground Construction. Was very popular when mimeod before. We sold just hundreds of them. All latest data and the old ideas revised. You are sure to find a good idea.

#34. MRL #10 All-wave Crystal Set. Shows 2 versions - a City operated set or a Country set. Same panel layout but different circuits and coil. As a City set it is very selective, altho this set has also brought in Moscow (7000); London (5200) and others by the hour. Uses Carborundum & battery or adjustable as desired - or a Diode. Easy to build.

#41. Code Short Cuts. Entirely revised. Shows new Transistor code oscillator as well as tube and buzzer. All kinds of kinks on learning "that" code. Keying, keys, speed, "bug" keys, etc.

MRL DP File #1. 5-2. 4 oz...1.00

Above DPs and Index, if bought separately, 10¢ each, plus postage. Order by DP # only.

MRL DP FILE No. 2.

Here are 15 more neatly-printed DPs to add to your collection of tested and revised circuits. This file includes some of our best sellers. Same introductory description as for DP-File #1.

DP-File #2 Index. Besides a cross-index, this sheet contains 1½ pages of discussion on "More Efficient Regeneration." Will be relished by anyone experimenting with 1-tube regenerators. Gives explanation of Misteli's combination regeneration control for our MRL HB-4, 1-tuber. Also all detailed drawings of variable grid leak, output, etc. At same price as other DPs - 10¢.

DP-16. MRL Portable Transistor Amplifier. A most handy 1-stage Transistor amplifier- built into a plastic box. One pencell goes inside. Tips plug into Xtal, or tube set and phones into two tip jacks. Regulated by volume control and switch. Easy to build. Brings in those weak stations U can "almost hear" now.

Continued from D-1.

DP-21. 10 Tested Crystal Set Circuits. These are mostly circuits sent in by our Fans but revised and bench-tested by us. So, you can be sure they all will work OK. Many new ideas in Crystal set circuits. All are easy to build. Parts list included. Can provide many hours of fun and practice.

DP-24. MRL No. 9 Selective Crystal Set. One of our old-timers - that still works good in congested areas. It is a 2-dial set with no tap switches. Uses an efficient circuit similar to the old Telefunken receivers, but we have added our QRM Coil to knock out any bad station. It is very simple to build.

DP-25. The Flextal Crystal Set. This has about every combination that you can imagine in a crystal set. It uses 3 sets of coils and 3 variable condensers. All on a 7x8 panel. All details are given for this interesting set. Selectivity is varied in 3 different ways, so it is also good for the City as well as Country.

DP-29. MRL Simple 1-tube Short Wave Set. All-wave. Can use 01A, 30, WD-11, 99, as well as the more modern tubes. 8 socket layouts are given. Very easy to put together from this plan. Uses a vernier dial, aluminum panel and base. The next step after Xtal sets. Special layout has given some extreme DX records as you can see in other MRL reports.

DP-31. MRL Powerful 2-tube AC All-wave Receiver. One of our most efficient SW receivers to date. Uses MRL 5-C or C Celluloid plug-in coils in a most sensitive circuit. A 6BA6 HF miniature detector and 6V6gt powerful power stage and Selenium rectifier. Works into a PM speaker on the 7x9 panel. A switch throws speaker or phones on. A delicate band-spreader helps to sneak up on the DX stations. Has a tone control as well as volume. Replaces our previous 6C6-42 DX circuit - but much more sensitive. No hum. Has already pulled in lots of good DX. We suggest this for the more advanced Fan.

DP-33. MRL Pocket Radios. All brought up-to-date. Same size as previous #19 set, but uses a Xtal Diode and Transistor for more power. Pencell inside 3x3¼ box. All details shown. May be hooked to any metal object for Aerial. Also shown is a Radio on a pencil. Also a Diode in a phone; and loading coil details. Layout drawings full size. Easy 2 make.

DP-38. MRL 6-watt Power Amplifier. Print is all re-vamped. A large amplifier to run a 12" PM, or magnetic speaker to full volume. Uses 76 as driver and (2) 42's in push-pull. Has input volume and a tone control. Phone jacks in both stages. Uses AC or DC on filaments. Power can be supplied by our DP-49 Power Supply. Blast those weak stations with this Power amplifier.

DP-39. 16 Tested Transistor Circuits. We spent many hours on this DP. About half the magazine circuits do not work, but these do - even with weak Transistors! All have been bench-tested and brought to efficiency. We have selected the 16 most simple circuits for their purposes. Most of them not found elsewhere.

DP-43. MRL #26 Single-dial All Wave Crystal Set. A Diode takes tuned energy from our Type RF Celluloid plug-in coils and runs it into a Transistor amplifier. It gives lots of volume- and may work a speaker on loud stations. Panel is 4x5; base 3x4. An easy pictorial diagram shows details. Some very good reports are Coming in on this set.

DP-47. MRL #28 ALL-wave Plug-in Coil Crystal Set. This is a complete revision of our original plan - of which we sold so many. It has equaled #2 and 2-A in DX records on Shortwave. Uses MRL Type RF Celluloid plug-ins, with turn details. Complete detailed drawings. Also data on a loading coil for Antenna tuning. One of our best DX'ers.

DP-57. MRL 1-tube Shortwave Converter. A real hot converter that hooks ahead of any RF or Superhet. Radio. Really bangs in the stations. Uses 1R5 miniature tube with its own filament supply battery. B-power comes from your receiver - and may be regulated, if desired. A well-layed-out rig, that uses your receiver as an amplifier. A switch throws the battery off and your regular BC set on. Oscillates all over the dial. Uses sensitive vernier dial. 3 trimmers make for easy balancing. A special wave trap goes between your set - which may be used on your BC set also. Altho for the more advanced - 3 pictorial diagrams give all details at half-size. Uses MRL 5-RF coils and MRL Type A for the oscillator. A real go-getter.

DP-63. MRL 2-tube All-wave DC DX Receiver. Lots of fine reports on this rig. Nothing like DC to pull them in. An easy chassis to lay out. Uses 32 or 34 detector and 33 audio, altho other tubes may be substituted. Has a tank condenser, vernier control, Ant. condenser control and regeneration. A 2½ ohm rheostat may be substituted if you can't find a 6 ohm. Gives details for winding MRL A coils. Lots of good reports as Europe, Asia, South America, etc. All details given.

DP-64. MRL #3 Selecto-dyne Crystal Set. We have made this DP over, and have concentrated on Diamond-weave spiderweb coils for some real good DX. By building up a powerfully-tuned primary and then varying the coupling of the secondary tuned circuit - it becomes a very efficient and selective set. Method of making diamond-weave coils is given in detail. Also data on pancake coils - if you prefer to use them for simplicity. At one time we used to get $15 for a completed set like this.

DP-69. MRL #12 2-slider Xtal Set. While our original #12 3-slider crystal, in HB-17, still works good- we prefer this later layout. Stations now being much closer "apart" - a variable condenser is needed to separate them. Also some form of selectivity - so we've put in a primary that slides inside the coil. It mounts on small panel and base. All details given. It also uses a crystal Diode for detector.

MRL DP File #2. 5-3. 4 oz. 1.00

SOME COMMENTS FROM OUR FANS.

Eric Hayne, Canada: "I find the sets on DP-4 work very well."

LIKES DP FILE AND PUBLICATIONS.

Len Cutress, Canada: "Received DP-file #1 and think it is fine. It fits my 3-ring binders of 3 Radio files on small sets. Built your QRM Coil (DP-18) at once. Like your publications because the material is good. I hope you keep up the good work."

AN OLD TIMER SPEAKS UP.

John J. Trowbridge, Illinois: "I've been in Radio for over 15 years- and I can say I've learned a lot from your simple books. We can use more."

MRL GOOD FOR YOUNG ORGANIZATIONS

Andrew Stall, Illinois: "I am ordering a set of DPs. Your organization is what a young boy, learning about Radio, needs. Your material would be mighty helpful to High School students, starting in Radio, if somehow, you could reach them by advertising, or by direct means."

EXPERIMENTERS AT ALL AGES.

Guy E. Singleton, Ill.: "At over 70, I'm still a DX Hound, interested in Super-hets. For many years I've taken several Radio mags., but I've never seen anything to equal your literature. Helps keep me going."

APPRECIATES OUR LINE OF WORK.

N.J., Newark, B.C.: "Have just gotten back into Radio after a lapse of 20 yrs. I think you are doing a tremendous job for the small set Experimenter builder. Keep up the good work."

MRL Detail Prints. Cont. from D-2

Following DPs will be revised as time permits. When 15 have been finished, another DP File #3 will be made up. In the meantime, any that are revised are at above prices. Ones not revised will be 7¢ each; plus postage. We will charge accordingly, so send enough.

DP-18. MRL QRM Coil. Gives 8 or more uses of this handy coil, to cut out, or boost stations. If a station bothers you, send for DP-18 at once.

DP-27. MRL No. 15 Crystal Set. A similar set to this once sold for $12. Exceptionally selective for local reception. altho some DX has been reported. Police OK.

DP-32. MRL No. 5 Double Crystal Set. Using 2 Xtals at once. Best method is shown. A customer in Baltimore, Md., claims European reception. Easy to build.

DP-35. MRL 2-tube Long Wave Receiver. An old-time circuit, used by Ship operators for copying press, etc. on long waves. It may be used now for beacons, police, ships, planes, etc. Uses Honeycomb coils, or you may wind big coils, or use RF chokes instead. Hook several chokes in series to boost inductance. We had it working up to 19,000 meters (.06 kc). May also be used as oscillator for calibrating UR coils. Uses triode tube and 42 for power amplifier. Other tubes may be substituted. ("SOS" comes on 600 meters, 500 kc). 1 coil.

DP-36. MRL AC-DC Long Wave Receiver. While DP-35 uses one coil, this one uses two. Uses a 6c6 as detector and 42 power, for output of 3 watts to work speaker, if desired. Uses electron-coupled regeneration. May use 2 Honeycomb coils, or RF chokes. Antenna primary coil is tuned in series or parallel, by throwing a special DPDT switch. It works good up to 15,000 meters or so.

DP-37. MRL Crystal Set Amplifier. Uses 42 tube for 3 watts output. Has input and output set of jacks, so you can easily see how it amplifies. Filament of 42 uses bell, or filament trans. or may use 6 volt storage battery. B-batts. may be from 45 to 250 volts. Brings in weak stations U can't hear ordinarily. Good tone due to pentode output. Our Universal Power Supply (**DP-49**) will give A and B power. May be used on a tube set as well. A very popular Detail Print, as most changes are made in the detector.

DP-42. MRL AC Oscillator, Direct Type. Handy around shack. A 6c6 in novel cir. direct to 110. No B's. Calibrate, align, locate stations. Plug-in coils, type C.

DP-44. MRL #29 Variometer Xtal Set. Easy to build; loud; selective. Has played DX. Variometer-building details. 1 var. condenser. Also a variation circuit.

DP-45. MRL #22 DX Marvel Xtal Set. Well-named from reports received. 2 sets of switches and a special coil. **MRL QRM Coil** may be used in Ant. if desired. Very selective and good on distance.

DP-46. MRL #30 DX Crystal Set. Originally taken from a popular magazine, which had it drawn all wrong. We have added many improvements, so now it is a real good circuit. Uses 2 **MRL QRM Coils** and 3 variable condensers.

DP-48. MRL #35 Prize Selector Crystal Set. This set took first prize in a NYC Radio Show for selectivity in the early days. Many have written that it is the best they have used for selectivity. Set uses 3 variable condensers, 2 tapped coils and one rotor coil. Fine for a city.

DP-49. MRL Universal No-hum Power Supply. Most of our power sets are built around this pack. Power supplies seldom change, so make one up to have around to connect to your rigs you build. Furnishes B from 0-250; filament of 2½ or 6.3 v. (altho 6.3 is preferred for modern sets). Output of B is variable. A Dynamic speaker field may be used as a choke. Supply mounted on a metal chassis, or may be boxed. Cable and plug run from pack to set, so just put a wafer socket on the rear of your set, and you have the power supply solved.

DP-50. MRL #21 Local Selective Crystal Set. The old capacity-coupled set made over. Fine for a crowded Radio area. You may set the selectivity adjustment, and go ahead and tune balance of set. Coupling may also help in selectivity. DP-50 shows pictorial diagram of layout. A large Aerial may be used in country.

DP-51. MRL #22 Combination DX Crystal Set. Novel little 3-condenser set, using 2 dials and a knob on front panel. DP shows a pictorial diagram. No taps required. A combination of our #8 and #9 circuits. A SPDT gives a broad or selective tuning.

DP-52. MRL #13 Variable Selectivity Crystal. Originally called a "200 miler" but this is too modest. DP shows one method of using a fixed Carborundum Xtal. Any crystal may be used. Uses a 2-slider coil and 3 variable condensers. One condenser is used in a novel trap circuit.

DP-53. MRL #27 Variable Selective Crystal Set. A novel capacity tuned set using a large variable and 2 trimmer condensers. Some of the more elaborate Xtal sets used this method of tuning in early days. Two tap switches control range of tuning and help to sharpen stations.

DP-54. MRL #34 Wired Wireless Crystal Set. Shows method of using several Xtal sets to talk to your neighbors. Uses regenerative set in conjunction. No license is required. See **HB-1** for a novel idea on using phones as a transmitter and receiver, **p. 18.** As many Xtal sets may be hooked to line as desired.

DP-55. MRL #24 Regenerative Crystal Set. One of most simple sets to build we have. Regenerative principle helps to stabilize circuit. You may use A or 5A plug-in coils, if desired.

DP-56. MRL #11 All-wave Xtal Set. One of our most simple sets to build, and one of the best. Uses 2 coils and 1 variable condenser to receive BC and Short Wave stations. Lots of good reports on SW. No losses from dead end turns or loose-coupling. A variation is shown using A or 5A coils and **MRL QRM Coil.** Police & Hams are very good on this.

DP-58. MRL #4 and 4-P Selective Crystal Sets. Circuit developed by the old Telefunken Co. of early days. DP gives data on 4-P circuit, which is for police calls. Very good for locals, altho some DX has been reported. In 1924 we paid $6 wholesale for one of these sets! 4-P can be mounted on a panel, 3" x 5".

DP-59. MRL #31 Crystal Police Call Converters. DP gives the original Police call circuit, plus 2 more plans. Mounts in box 4" square. Will not injure your BC set. Uses no power. A Xtal diode or fixed Xtal may be used if desired. Uses A or 5-A coil on all bands.

DP-60. MRL 2-stage Tuned Radio Frequency Amplifier. Uses 6j7 or other modern tubes. Uses 2-gang variable condenser. MRL RF Coils may be used in both stages. Uses power from regular BC set. Switch cuts Ampl. in or out. Single dial control. Harmless to Radio. Will sharpen stations and improve it.

DP-61. MRL "50-in-1" Antenna Tuner. One of the niftiest rigs that has come out of our Labs. We named it because there are so many combinations that may be obtained with it. Will help any set, BC or Short Wave, DC or AC. Even has its points with a Xtal set. All types of Aerials, traps and boosters, grounds, etc. may be thrown in at will. Uses A or

See next page -

MRL Detail Prints Cont. from D-3

5A plug-in coils, 2 condensers and 2 sets of switch levers. May be put into a box 4" square and set alongside the Radio.

DP-62. MRL Improved Capacity-Coupled Crystal Set. A simple circuit used years ago for good selectivity. In fact, there are many modern sets using this same method of obtaining selectivity. Uses 2 coils and 2 var. cond. No taps are used. Easy to build.

DP-65. MRL #17 Pinole Special Crystal Set. Simple to build but efficient. 1 coil; 3 switch levers; 1 var. cond. Good DX properties. Selectivity control.

DP-66. MRL #20 Variable Selectivity Xtal. Uncanny operation. Easy to build. Gets DX. 2 coils; 1 var. cond. Variometer optional - 700 to 800 miles reported.

DP-67. MRL #25 Selective Xtal Set. This is one of the old standby sets. Uses 1 coil and an **MRL QRM Coil.** May use a trimmer condenser on the QRM and a large variable to tune. Makes a neat panel layout. Easy to build. The Xtal is poled differently than most sets. Pulling the primary coil away will increase selectivity a lot, if desired. OK DX.

DP-76. Operator's Code Chart. You never saw as many characters - in code, abbreviations, Phillip's code, etc. in International, Continental and Japanese. It also has letters used in foreign languages, etc.

WATCH THE MRL "RADIO FLYER" for announcements of new DPs, revisions and notes. Remember, U get the "Radio Flyer" and new DS (Data Sheets) FREE if you make an occasional purchase. Keep on our list- it's to your advantage (and our's! Hi) Let us know what you'd like to see in future MRL literature. We want to please U.

MRL DATA SHEETS (DS)

Here is something we are sure you will like. You know this material piles up around here so fast - and we have to do something about it. It is a shame to let it become obsolete- or throw it away as all our Fans can use it so well. When we had the RB&H we could use some of it up. We know from experience how Fans "eat it up" - so we hope we have started on a good adventure.

MRL "Data Sheets" (DS) will be sent out in 3 sections for each volume. We expect 4 DS with each issue of the Flyer, there being 2 DS on each sheet. With the 3rd section we will add an Index for the 12 pages so material will be easy to locate. File in a binder for future reference.

Steady buyers will get all DS as issued **FREE.** With each issue of the **Flyer** we will throw out the non-buyers - but they can get future copies of the DS when they start again. We don't expect buyers to rob the bank- but a certain amount of activity is required on your part.

Many are saying:"Hoopie! We R practically getting the RB&H back again!" Thanks, fellows, we hope DS will ever become more interesting. Seems to be liked by everyone, as evidenced by the many letters. Send in your favorite circuit or kink so we can pass it along.

Material is all solid - with most advertising omitted. Featured most are constructional articles and facts needed by the Experimenter for a long time to come. Often revised re-prints of older material is included. An index comes on page 12 of each completed volume.

Parts lists, schematics, line sketches and details are given to make it easier to construct the many projects. DX reports & kinks from our Fans are also included. It is material that you need in your Radio library.

MRL DATA SHEETS. Volume 1.

CONTENTS.

Vol. 1 MRL DS. 2 oz. wt. .30

MRL DATA SHEETS. Volume 2.

CONTENTS

VOL. 2 MRL DS. 2 oz. wt.....30

MRL DATA SHEETS. Volume 3.

CONTENTS

VOL.3 MRL DS. 2oz.wt.....30

Since 1932 MRL HI-Q Celluloid Plug-in Coils

have been **BEST** for Long Distance reception

"HI-Q" EQUALS EFFICIENCY

"Q" is the index, or measure of efficiency of a coil, or inductance. Specifically, - the ratio between Inductive Reactance and effective Resistance. MRL Celluloid coils have this property of low-loss. They are more efficient than other coils for DX reception, as attested by hundreds of letters from customers.

The special MRL Coil Cement, which holds the wires in place, is non-conductive. 15 meter SW stations have been tuned while applying the cement, without any change in vernier-dial tuning. The 4-prong coils have 1/4" hole in the bottom between prongs, to help prevent RF "creeping."

Celluloid is similar to Bakelite in efficiency. However celluloid may be made very thin - which makes it far superior for DX properties, for less "blocking" material is within its RF field. Grooved and ribbed coils have extra material in their RF fields; while angles formed by ribbed coils offer resistance to high frequency currents.

Many have the idea a celluloid coil is flimsy. Such is not the case with MRL Coils. Up to #20 wire has been wound without any warping. Hundreds of our coils have been in constant use for years. Rings and wire help to strengthen the forms. Try replacing any coils with these and see the difference in DX.

FOR THE TECHNICAL MAN

Celluloid, as used by us, has the following properties, as given by Du Pont Visco-loid Co.:

Dielectric constant: 6.3. **Power factor:** 2.5%. Both measured by a bridge method at 2000 volts 60 cy. AC, using Celluloid as the dielectric.

Volume insulation resistance: For .060" stock, the resistivity is given as 3.85×10^5, and in megohm cent. as 9.75×10^5.

Dielectric strength: Taken under blunt needle points. Per .001" in thickness gave strength of 635 to 780 volts. (.015" - 10M v)

Surface resistivity: Between 2 parallel electrodes is an average of 3×10^7 power megohms at 14 deg. C. on avg. of 4 samples.

Moisture absorption: 3% of wt.

Tensile strength: 4900 to 8500 pounds per square inch.

MRL COIL CONSTRUCTION.

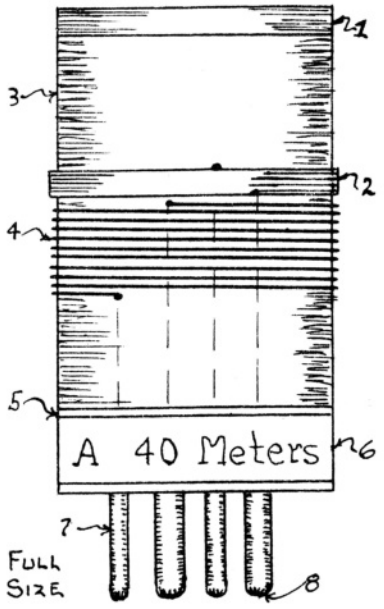
1. Reinforcing ring, placed under heavy pressure. Covered by colored ring to denote band.

2. Ticklers right- concentrated field. Taps at right place.

3. .015" form. Low-loss. Solid.

4. Coil dia./length correct. Right spacing for low distributed capacity. Wire will not slip.

5. Base placed by pressure.



6. Labeled for each band.

7. Burnished prongs- no noises due to dirty, or rosin-coated prongs, to mar your reception.

8. Contacts heavily tinned and rosin-soldered. They fit the standard tube sockets.

9. Size: 1½" dia. x 2½" winding space. Long-wavers have 3½" winding space for wire.

RANGE and OPERATION.

Our plug-in coils are designed to tune with a .00014 midget variable condenser. You can see there is plenty of overlap between bands. Because condensers, and conditions vary, we can only give approx. range of coils. Each type of coil is made in each of the following ranges:

Band	Freq. Kilocycles
20 meter.....	19,000 - 12,300
40 "	13,000 - 6,000
80 "	6,200 - 2,700
160 "	2,800 - 1,250
HF-BC.....	2,100 - 950
Broadcast.....	1,350 - 600
LF-BC.....	1,000 - 436
Long wave.....	600 - 360

Short Waves. For 20-40-80 meter bands we suggest using the .00014 mfd. cond., but with a 2-plate vernier condenser connected in parallel. Separate the two plates 1/4"- and no vernier dial is needed. 20-40-80-160 m. stations tune about the center of the dial. If a larger cond. is used for tuning, the stations are hard to locate.

Medium Waves. Bands of 160 and BC do not need the 2-pl. vernier condenser. It takes 2 BC coils to completely cover the BC band. The HF-BC is used on the high-frequency end, and goes from police to center of BC band. As a result, the "peanut" stations tune at the top of the dial. This allows greater separation and ability to find stations you never heard before. For the upper half, use the LF-BC (Lo-freq-BC) coil, which covers from center of BC to ships. Consequently, it crowds LF-BC stations to the bottom of the dial and allows sharper tuning. You may also hear some new LF-BC stations.

Long Waves. There are lots of queer things up here, as ships, beacons, compass, police, foreign BC, etc. To go above 833 m. we suggest a 2-gang .00035 with both sides connected in parallel across the .00014. In this case, you may need some more capacity to add to plate condenser for more regeneration. If interference from BC station, use an MRL QRM Coil in series with the Ant. to dampen it out.

Precaution: When extracting coils, tubes, etc. from sockets, always rotate them as you pull. This saves socket as well.

The plug-in coil is more efficient than tapped coils or coil switches. The former have dead-end effects due to deadening of the circuit by unused portions of the coil. In coil switch combinations, too many connections may get out of order, as well as deadening effects due to nearness of other coils.

WHAT SOME OTHERS SAY:

Jones Radio Handbook: "Celluloid..its advantage is that a very thin form will serve as an excellent coil support..makes an extremely low-loss form..space-wound coils are superior to others..grooved coils undesirable."

Calif., Oakland, E.M.S.: "Coils very good; calibration on nose; oscillation over whole scale."

Calif., Oroville, H.A.B.: "Your BC coil fine. Easy to tune lots of DX across U.S.A. on 12' Ant."

Calif., S.F., K.: "On Type C I played Japan and Hams all over."

Colo., Walsenburg, J.S.: "Your Cell. Coils are fine for DX."

Minn., Granite Falls, H.L.: "My Xtal set with your plug-in coil, I built, sure works fine."

Miss., Richardson, C.L.F.: "Got UR Xtal and Plug-ins. Work fine."

Pa., Reading, R.J.S.: "Coils R fine. Wouldn't think of making them for the price you ask."

Wash., Seattle, O.E.S.: "Good luck here with your SW coils."

Wash., Spokane, I.E.R.: "Rec'd MRL Coils. Sure 'fine business.'"

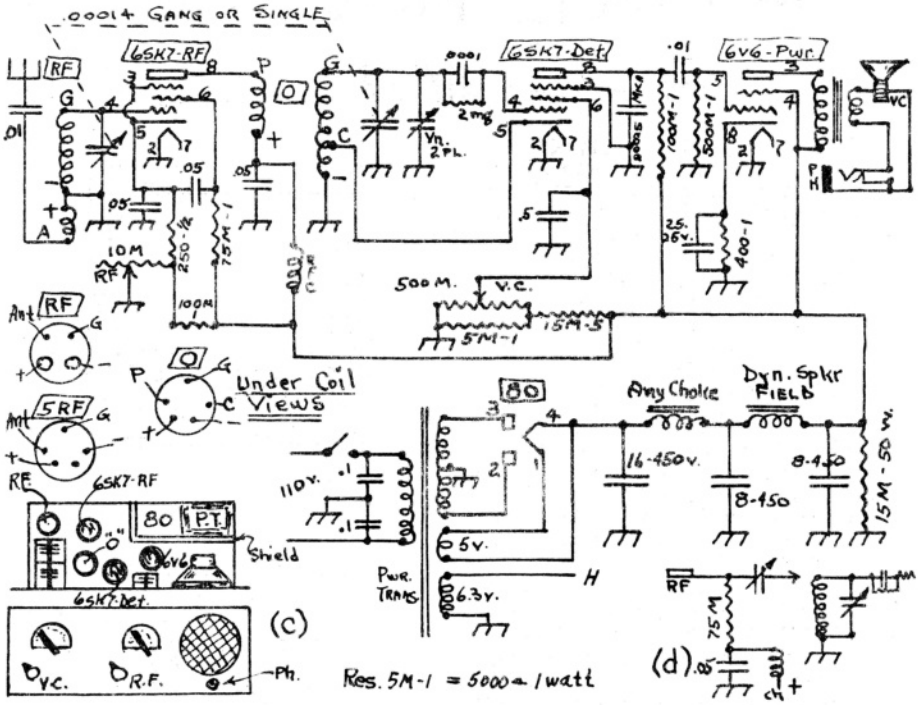
Wash. D.C., H.B.: "First station played was DJA, DJB (Germany). work better than the -- coils I paid $3.50 for. Have many good makes, but your's are best."

MRL HI-Q Celluloid Plug-in Coils

NOTE: WHEN ORDERING 4,6 Pr. COILS

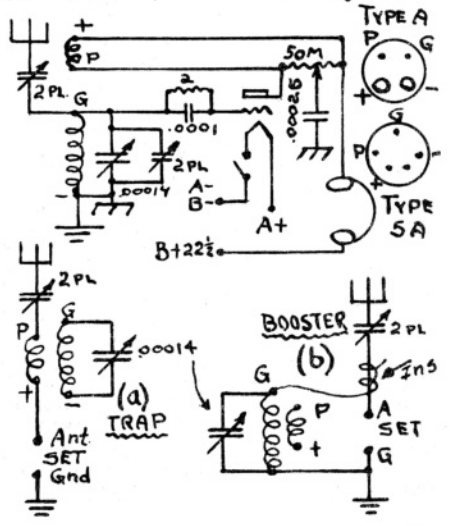
when a customer sends us the bases. They must be 1-3/8" dia. as 01a, 26, 42, 71a, 80, etc. 6 pr. may be substituted for 4 pr. It is easier for you to get a few from a dealer's junk box but impossible for us to get a 100. Break off glass; snip off wires but do not clean up; pack in paper in box and ship 3rd class. Be sure to send 3rd class as no allowance for 1st class or airmail postage. Put a tag **"may be opened for postal inspection--"** and you can then seal your box. For your work we allow 2¢ each for 4 or 6 pr. and 2¢ each for 5 prong of 1-3/8" dia. as well as third class postage you paid. If you have access to any number of 4,5 6 pr. bases we will take them on same basis. No allowance for any less than 1-3/8" dia.

20-40-80-160 m. bands sold in sets only. Base drawings show a convenient under-view of coil & socket. If wiring from another cir. be sure to check connections. Following coils will cover 90% of the plug-in coil needs of the Builder. It is a good idea to read **ALL** of page **E-1** to get familiar with our set-up.



MRL TYPE A and 5-A

This type covers the majority of cir. used by Experimenters. Tickler regeneration feeds back to grid coil,- increasing volume and giving c-w code reception. Very smooth, efficient regeneration. If set fails to oscillate, you probably have tickler connections reversed. .00025 mfd. regen. cond. is used for average good operation. If it oscillates too much, your set is above average construction, and you may substitute a .0001. If it requires more cap. (.0005) then U have losses in your RF circuits, as poor layout, connections, etc. SW coils sold in sets only.



MRL TYPES RF, 5-RF and O.

RF coils used in TRF stage for greater DX and selectivity. As this stage tunes broadly, the 2 cond. may be ganged. A 2-plate cond. is used for fine tuning on the detector, only. RF coils are correctly made with close coupling for SW and loose for longer waves. (d) shows how to connect RF stage to usual detector coils as A, C and RG. **MRL ORM Coil** and cond. may be placed in series with Aerial and primary for any bothersome station. Also, an **MRL TYPE D coupler** may be used with RF coil working inside, when a higher gain is desired in the Aerial-ground circuit.

O coils are hi-impedance primary detector coils with a big gain from RF stage. O uses the most efficient C-electron-coupling regeneration.

The above cir. is most efficient with reports of Worldwide reception. Other tubes may be substituted. (c) shows optional layouts using metal chassis and panel. Dynamic speaker helps to give better filtering. See Catalog index for parts.

MRL Type RF. 4 prong base. See **NOTE** top of first column about 4 prong tube bases. RF coils match any other types of same band.

CAT.		wt. oz.	
7-16.	4 RF SW Coils....	8	3.00
7-18.	RF-HF-Broadcast..	4	.75
7-17.	RF-Broadcast.....	4	.75
7-19.	RF-LF-Broadcast..	4	.75
7-20.	RF-Long wave.....	6	1.00

MRL Type 5- RF. 5 prong base. Same as RF, except base.

7-137.	4 5-RF SW Coils..	8	3.00
7-139.	5-RF-HF-Broadcast	4	.75
7-138.	5-RF-Broadcast...	4	.75
7-140.	5-RF-LF-Broadcast	4	.75
7-141.	5-RF-Long wave...	6	1.00

MRL Type O. 5-prong base. Detector coils with large primary

7-11.	4 O SW Coils.....	8	3.50
7-13.	O-HF-Broadcast...	4	1.00
7-12.	O-Broadcast.....	4	1.00
7-14.	O-LF-Broadcast...	4	1.00
7-15.	O-Long wave.....	6	1.25

Diagram (a) shows A (or 5-A) used as an all-wave trap to cut out stations, or (b) as a booster to increase volume and selectivity on stations for any receiver.

MRL Type A. 4 prong base. See **NOTE** above about 4 prong bases.

CAT.		oz. wt.	
7-1.	4 A S.W. Coils...	8	3.00
7-3.	A-HF-Broadcast...	4	.75
7-2.	A-Broadcast.....	4	.75
7-4.	A-LF-Broadcast...	4	.75
7-5.	A-Long wave.....	6	1.00

MRL Type 5-A. 5 prong base.

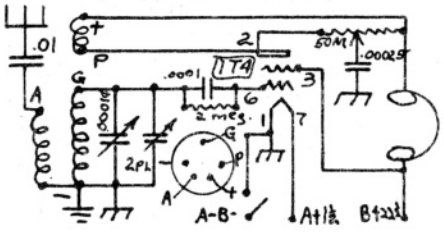
7-121.	4 5-A S.W. Coils.	8	3.00
7-123.	5-A HF-Broadcast.	4	.75
7-122.	5-A Broadcast....	4	.75
7-124.	5-A LF-Broadcast.	4	.75
7-125.	5-A Long wave....	6	1.00

WHEN ORDERING any coil be sure to give **CAT. #** and add **Postage.**

MRL TYPE B.

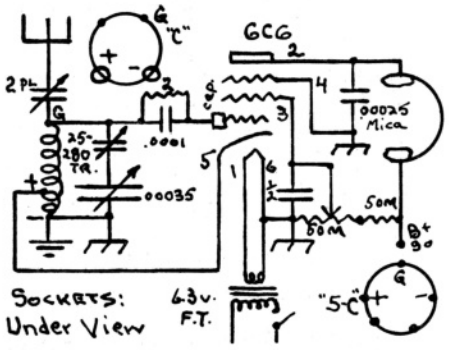
B is the same as A, except all 5-prong, and with primary. Used in many mag. cir. Primary correct for proper selectivity.

7-26.	4 B SW coils.....	8	3.50
7-28.	B-HF-Broadcast...	4	1.00
7-27.	B-Broadcast.....	4	1.00
7-29.	B-LF-Broadcast...	4	1.00
7-30.	B-Long wave.....	6	1.25



Coils Coil Forms Accessories Magnet Wire

MRL TYPE C.



4 prong base. This electron-coupled circuit is one of the best SW circuits known. Wound on our Lo-loss celluloid forms and with proper placing of tap, you have an Ace coil for efficiency. Regeneration is very smooth.

May be operated from 6.3 v. fil. trans. and 45-90 v. of B. Or from **DP-49** power supply. DP-31 shows circuit with 1-step of audio. A 2-plate bandspread cond. may be placed across (G) and (-) on the coil. Be sure to use a 2-plate Ant. cond. controlled from panel, similar to HB-4, for best results. Please aend along 4-pr. tube bases (see page E-2).

7-6.	4 C SW Coils....8 oz.		**3.00**
7-8.	C-HF-Broadcast..4 "		**.75**
7-7	C Broadcast.....4 "		**.75**
7-9.	C-LF-Broadcast..4 "		**.75**
7-10.	C Long Wave.....6 "		**1.00**
DP-31.	2-tube AC set.....		**10**

MRL TYPE 5-C.

Same as C except 5 prongs:

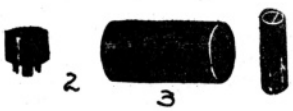
7-127.	4 5-C SW coils.8 oz.		**3.00**
7-129.	5-C HF-BC.....4 "		**.75**
7-128.	5-C Broadcast..4 "		**.75**
7-130.	5-C LF-BC.....4 "		**.75**
7-131.	5-C Long Wave..6		**1.00**

MRL HI-Q CELLULOID PLUG-IN FORMS

See page F-5 for 4 & 5 prong. MRL 6-prong forms. Same size as others.

Regular 2½" long. **7-46.** 5 oz.. **.20**
Long wave 3½" " . **7-48.** " **.25**

BAKELITE & FIBRE COIL FORMS.



Large Coil Forms. Cardboard. 3½" dia. x 21" long. Suitable 4 Tesla, or large loading coil for Long waves. WT. 2 lbs. each...**50**

(2) Used Tube Bases. OK for HF coils around 10 m., or for small rigs. 1-1/8" dia. only. Specify if 4 - 5 - 6 - 7 - octal (7 pr. only). **7-47. Specify. Each .05**

(3) Coil Tubing. Cut to any length. 1/16" wall. Outside dia. given. All new stock. Prices per lineal inch. Postage extra.

½"	Bakelite.....	**7-174.**	**.07**
1"	"	**7-166.**	**.09**
1½"	"	**7-69.**	**.14**
2"	"	**7-167.**	**.16**
3"	"	**7-67.**	**.22**
3/8"	Fibre.....	**8-110.**	**.03**
1"	"	**7-68.**	**.06**
1½"	"	**7-99.**	**.07**
2"	"	**7-66.**	**.09**
5½"	Hard rubber.....	**7-171.**	**.15**

2XM & P2XM Xtal Set forms. F-4.

Crystal Set Coils, see F-5.

Coil Cements & Thinner, see R-1.

COIL BUILDING PARTS.

(1) Type C Eyelet Lug. For coil terminals. 1/8" hole x 1/16" deep x 3/8" lug. Fit in QRM, or other 1/16" wall forms. Rivet in. **13-167-C. Eyelet C lugs. doz..07**

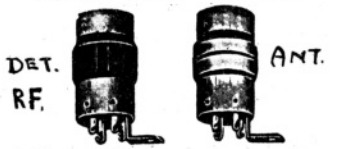
(2) Spade Bolts. Hold coils up straight. Fit 6-32 nut. Many other uses. **7-54. Doz. 4 oz. .15**
6-32 x ¼" hex. nuts for above are extra. **13-3. Dozen. .06**

(3) Tiny Fahnstock Clips for coils and Eyelets. See page **F-4.**

(4) Banana Plugs & Jacks for mounting Xmtr or horizontal type coils. See page **M-1.**

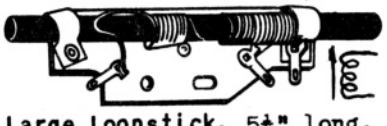
(5) Coil Shields. Shields from local QRM; sharpens set. Used but good condition. Specify size of coil, and if round or square shield wanted. **7-60. 4 oz. .10**

AC-DC T. R. F. COILS.



Used in midget sets, or for replacement use. Also in several MRL and other experimental circuits. Unshielded; efficient. Low cost. Primary of some makes may slide along to adjust selectivity. Range is 540-1750 kc using a .00035 cond. Sold in pairs or singly; please specify. List on each coil is 85¢.

Antenna Coil. **7-44.** 4 oz. **.50**
Detector Coil. **7-45.** " **.50**



Large Loopstick. 5½" long. BC band. Mounted on fibre base. **7-182. Lge. Loopstick. 4 oz. 1.00**

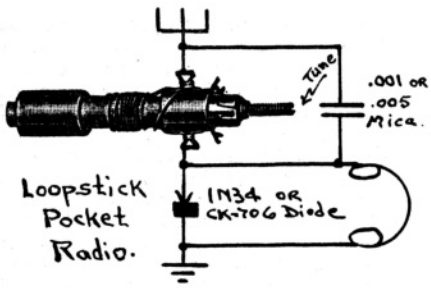
MAGNET WIRE.

Complete list; all in stock for immediate shipment. We are about the only M/O house in the U.S. selling Magnet Wire by the 100'. You know how much you are getting this way.

Either cotton or enamel covering is OK for coils, but cotton is preferred for Xtal set coils. However, enameled takes less space by a few turns, but tunes sharper due to capacity between each turn being added to tuning. Per 100 ft. Don't forget postage.

20	Double Cotton.	**7-88.**	**.60**
22	" "	**7-89.**	**.50**
24	" "	**7-90.**	**.35**
26	" "	**7-91.**	**.30**
28	Single cot. Enam.	**7-92.**	**.20**
30	" " "	**7-93.**	**.15**
16	Double Cotton.	7-26 Ft.	.03
	" "		
38	" "	**7-97.**	**.15**
12	Enameled.	**7-70.**	**1.75**
14	"	**7-71.**	**1.25**
18	"	**7-73.**	**.60**
20	"	**7-74.**	**.45**
22	"	**7-75.**	**.30**
24	"	**7-76.**	**.25**
26	"	**7-77.**	**.20**
28	"	**7-78.**	**.15**
30	"	**7-79.**	**.15**
32	"	**7-80.**	**.15**
34	"	**7-81.**	**.15**
36	"	**7-82.**	**.15**
38	"	**7-83.**	**.15**
40	"	**7-84.**	**.15**
44	"	**7-181.**	**.15**

VARI-LOOPSTICK.



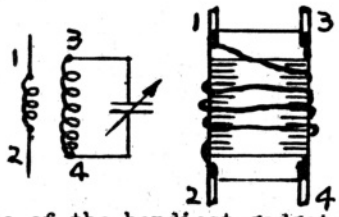
Over 100,000 sold by mfrs. in 5 mo. It can replace a loop but is 2½ times more sensitive. Will also improve reception for almost any set on BC band, using a small Aerial. Gives greater range for DX Fans. Boosts sensitivity and signal-to-noise ratio. Any angle OK. Average "Q" is 250. A magic Ferrite core tunes the bankwound coil from the end.

Mr. R. Vipond, Monterey Acdy., Watsonville, Cal. says: "This one works very well as a pocket set. I get 5 stations using a screen and water pipe. One couldn't ask for a simpler set. Your M/O biz can't be beat, and I like the way you pack things."

See page **F-5** for more data. In various RB's you will find more. The loose wires may be unwound to get more pickup if desired. Is 2¼" long. List price $1.00.
Vari-Loopstick. **7-179. 4 oz. .75**

Coils Couplers I. F. Trans. Chokes Switches

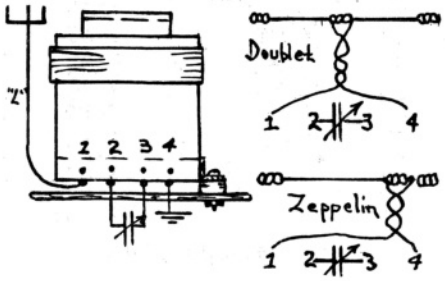
MRL QRM INTERFERENCE COIL.



One of the handiest gadgets on any Broadcast Radio. Placed in parallel with the Ant. and Gnd. it boosts and sharpens the signal. In series with Ant. and set it eliminates, or cuts down unwanted stations. When used in series leave it on the bother some station and tune balance of set normally. Uncanny in operation. Hundreds sold. Tunes with a .00035 variable or a 50-500 mmfd. trimmer. DP-18 goes with the QRM coil.

QRM Coil & DP-18. **7-42. 4 oz..50**
DP-18 alone.....**.10**

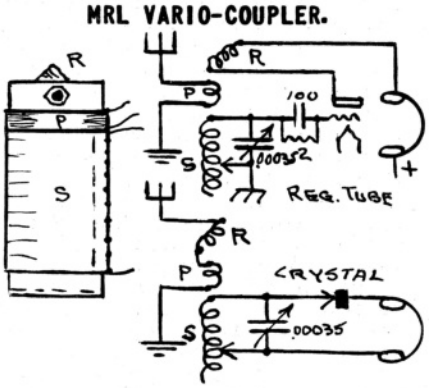
MRL D LO-LOSS ANTENNA COUPLER.



We have sold these since 1934. 2" dia. x 2" high. Wound on Celluloid. Raised a little above chassis and plug-in coils slip inside. This coupler forms the primary of the circuit, and is tuned with a .00035 var. cond. in series. Latter may be mounted on the panel or outside the set. Tunes to a harmonic and increases volume and selectivity on a station, from 10 to 600 meters. May be used with any type Aerial - 3 kinds shown above. Furnished with mounting bracket and details in DP-11. (in preparation)

D Coupler & DP-11 **7-43. 4 oz..75**
DP-11 alone.....**.10**

MRL VARIO-COUPLER.

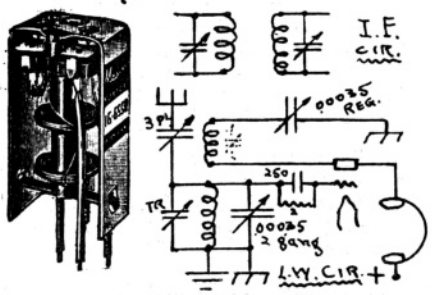


This is the only Vario-coupler on the market. It is composed of a primary, secondary and rotor. The large secondary has 10 taps. The stationary primary and secondary are wound on a 2" low-loss celluloid form. The rotor revolves inside one end. Coupler may be mounted in any position, on the rear of a panel, by the shaft bushing and nut.

There are numerous ways this coupler may be operated. It may be used in our crystal sets #3, 20, 21, 22, 29, 35 and others. Tube circuits offer many varied combinations. May also be hooked in series as a Variometer. More hookups are shown in DP-13. (in preparation)

MRL Vario-coupler Coil and DP-13 **7-172. Shipping wt. 1 lb. 2.50**
DP-13 only..... **.10**

SUPERHETERODYNE INTERMEDIATE FREQUENCY TRANSFORMERS.



Meissner shielded can type 1¼" sq. x 2½" long. Held down by two spade bolts. Two lo-loss Steatite trimmers tune from the top with range 450-475 kc.

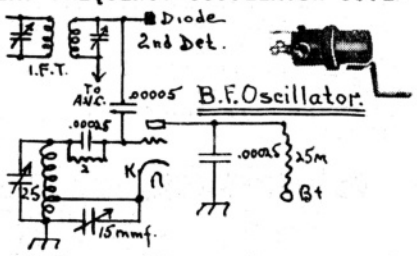
The hi-gain coils are ⅜" dia. May be used for 2½ mhy chokes by discon. 1 side of cond. May also be placed in series and used for loading coils if cond. are disconnected. Input and output are about the same. Complete directions for use and alignment of superhets. is furnished.

Circuit shows use as long wave receiver from 660 to about 2000 meters. If ship wave of 600 m. is wanted, take off some turns. Disconnect trimmer on tickler. If no oscillation reverse tickler.

List price of each is $1.00.

IF Input Trans. **7-116. 6 oz. .85**
IF Output " **7-117.** " **.85**

BEAT FREQUENCY OSCILLATOR COIL.



OK for replacement or new construction. Unshielded coil is ⅜" dia. x 1-1/8" long. Furnished with bracket and 3-lug con.

FB for code reception practice - electron-coupled. Peaked at 456 kc to match above IF coils. Range 290-650 kc. Signal from oscillator beats against a near IF freq. This produces a readable audio, or beat note. Output hooks to grid of 2nd det. thru .00005 mica. The trimmer between K and ground gives fine adjustment to the tone of the note. Regular selling price is 74¢ by others.
BFO Coil. **7-118. 4 oz. .40**

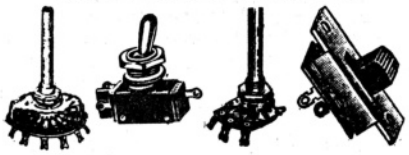
RADIO FREQUENCY CHOKES.

RF Chokes used in ordinary SW or experimental sets aren't too critical. They choke off the HF and feed it to ground thru a bypass cond. The usual size is 2½ millihenries; 28-32 ohms resistance and air core. Usually used after Plate of detector tube.

A PI, duolateral or sectional RF choke is shown. Has less distributed capacity and some prefer them. One coil chokes may vary in size and shape.

2½ mhy Sec. choke. **6-3. 2 oz..35**
" " One coil ". **6-2.** " **..30**

COIL & PANEL SWITCHES.



3 cir.; 2 pos. For changing from police to BC. **7-63. 4 oz. 50**

4 cir.; 2 pos. Same use, but can switch more circuits. Many other uses. **7-64. 6 oz. .75**

SPST	Toggle.....	23-1.	2 oz.	.35
"	Rotary.....	23-2.	"	.25
SPDT	Toggle.....	23-3.	"	.45
"	Rotary.....	23-4.	"	.35
"	Slide.....	23-7.	"	.30
DPST	[illegible].....	23-5.	3 oz.	.30
DPDT	Toggle.....	23-6.	"	.75
"	Slide.....	23-8.	"	.45

7/16" n. p. round Knurled Nuts. Fit toggle sw. **13-8. 2 nuts .05**

QUESTIONS - 3¢ stamped envelope!
We furnish our time; you furnish postage. Arrange questions with space between for answers. Please limit to 1 page. We like all your reports to pass on to other Fans via **RB & H.** Advise if we can print your address.

SEMICONDUCTORS — MRL DX CRYSTALS

ABOUT CRYSTAL SETS.

The only correct way to start any branch of Radio, is by making a few Crystal sets. Go from there to 1-tubers, and finally, up to the communication set as it is known today. Nothing discourages the beginner like over-optimism that he can start at the top, without knowing the principles of Radio. Then, after a large outlay of money and time - his "monster" doesn't work - he may quit Radio for good. The Fan, who starts at the beginning and gradually works up - will accept Radio as his lifelong hobby or vocation.

Contrary to many beliefs of self-styled "experts" - the construction of Crystal sets isn't confined to youngsters - altho they are in the majority. We have hundreds of Engineers and other professional men in our files. They build these little sets as diversion from their slide rules and other complications. It is possible to spend one's lifetime in this inexpensive and interesting field and always find you can always learn more. Semi-conductor circuits can run into big complicated layouts if you so desire. However complicated, we Old Timers still are right in calling them "Crystal sets."

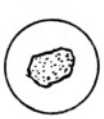
From here on, you may branch out into larger rigs, Amateur Radio, repairing, operating, research, engineering, writing, teaching, or any branch you desire. But to start anything - be sure to start at the beginning and the rest comes easier.

Crystal set conditions are a lot more favorable now with better circuits, more powerful transmitters, and lower priced parts, than when they were considered dependable receivers prior to 1921. Millions are being spent by the large Labs. to even better these conditions.

MRL MOUNTED CRYSTALS and MATCHING CATWHISKERS.

Any crystal and its catwhisker is a Diode - and works anywhere a Diode is required. We try to sell the most sensitive crystals obtainable. If we can make a more sensitive crystal we do so instead of buying it mounted. The catwhiskers furnished match the crystals. All crystals are set-tested for sensitivity. They are mounted in soft metal approximately ½" in diameter. It is best to renew crystals every 6 months for best reception.

MRL STEEL GALENA CRYSTAL and C/W



This long has been our best crystal seller, and repeat orders by the hundreds attest this fact. Hundreds of letters are on file similar to the following:

Wisc., Sheboygan, A. D.: "*Since receiving your Steel galena Xtal I could hardly believe my ears, to know I was listening to distant stations. It beats all other crystals I ever used.*"

Steel galena is rough, and resembles a piece of broken steel rod, whence its name. Do not confuse it with the smooth, layered type that is hard to keep in adjustment. Both have the same chemical formula.

Most long distance crystal records are made with Steel galena crystals. When you hear a weak DX station, re-adjust the catwhisker for sensitivity, using a very light c/w furnished with the crystal. If stand has a heavy wire - wrap the tiny c/w around it. Steel galenas stay in adjustment because most of their surfaces are hot. Do not use battery on Steel galena. They are as clear as a bell!

9-1. MRL Steel galena. 2 oz. .25

MRL SILICON CRYSTAL and C/W.

MRL is one of the few sources for mounted Silicon Xtals and C/W, outside of the Diode manufacturers. Silicon resembles Steel in color, and is a furnace product. It is used a lot in Diodes for HF and Radar work with fine c/w & as a Short wave detector. It is also sensitive to light waves. A grown-junction Silicon rectifier may work up to 1500 v. at 50 ma. (see HB-10). For detecting signals we furnish light c/w. Tungsten may work even better than one furnished. All set-tested.

9-7. MRL Silicon & C/W. 2 oz..25

MRL IRON PYRITES XTAL and C/W.

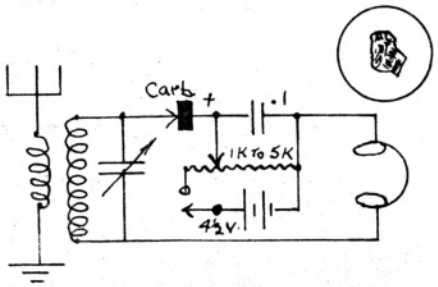
Va., Norfolk, R. M. M.: "*Your Iron pyrites crystal is very sensitive to Short waves; one of the best I have used to date. The first night I played England and Berlin on 19-25 meters with good volume. I used MRL #28 Xtal set circuit (DP-47) with MRL Type RF Celluloid plug-in coils. On the 40 meter coil I got Cuba, England, Chicago and many other stations.*"

Above unsolicited testimonial is one of many reporting on our Iron pyrites. We have sold hundreds of them to satisfied customers. Thousands of fixed and adjustable Iron pyrites were used in the Harkness Reflex sets of the 1920's. It has been claimed they do not tarnish as readily as Steel galena and may stand a little more current.

They seem to work better on SW than Steel galena. A heavier c/w is furnished with Iron pyrites than Steel galena. A Gold c/w may be an improvement over the one furnished. One advantage of an adjustable c/w is the ability to select the most sensitive spot with the right pressure. It has a lot to do with DX reception. Re-adjust on weak stations for more volume. Set-tested.

9-2. MRL Iron pyrites & C/W .25

MRL CARBORUNDUM CRYSTAL and C/W.



As far as we know, no other firm sells a mounted Carborundum crystal and c/w. All are set-tested. We get magnetic speaker volume on loud locals. It is noted for its stability.

Carborundum crystals should be operated at the voltage point where the greatest signal change results from the smallest input voltage. In other words, the correct voltage should be applied to each Carborundum Xtal in order for it to work efficiently. The diagram shows how this is accomplished. You will find a point where it is more sensitive - below which, or over, it is much less sensitive. Up to 10 v. DC have been used on Carborundum Xtals - or no voltage at all may be used for strong signals, depending on conditions. Less battery is usually required on DX stations. Get the polarity right or the signals will be weak or fuzzy. We have gathered a lot of good information in our Handbooks 3 and 10 that will prove very interesting to you.

A hot spot is found better if an adjustable c/w is used. Altho Carborundum has been tested with a 5 lb. pressure - we used to have about 4 oz. on them at Sea, in 1920, with RCA receivers. The right combination of hot spots, light pressure and correct bias voltage will give you a very efficient detector. Same conditions apply to our fixed Carborundums. We furnish a heavier c/w with it than with a Steel galena.

9-34. MRL Carborundum & C/W. .25

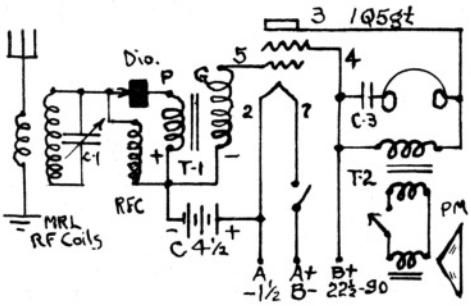
MRL LOOSE CRYSTALS.

Some Experimenters may like un-mounted crystals. They may be mounted in Wood's metal, or packed in a cup of Tinfoil. One good way is - to make a spring-brass, or phosphor-bronze clip as shown. These loose crystals are the run-of-the mill variety, and not tested altho we try to sell good ore. We much prefer the mounted ones,

which are tested and guaranteed. Proper mounting size furnished. About 2 pieces to an envelope.
9-10. MRL Loose galena.....10
9-11. MRL Loose Iron pyrites..10
9-12. MRL Loose Silicon.....10
9-6. MRL Loose Carborundum...10

Diodes

ALL-WAVE DIODE DET. & AMPLIFIER



PARTS LIST.

1 .00014 or .00035 var. (C-1).
1 .1 x 600 bypass cond. (C-3).
1 Diode, any type.
1 3:1, or other audio transfr.
1 RF Choke.
1 Output transformer, 8000 imp.
1 PM speaker.
1 1Q5gt tube, or equivalent.
2 SPST toggle switches.
1 Octal wafer socket.
1 Set MRL Type RF plug-in coils.
1 Wafer socket to match coils.
2 Tip jacks or jack for phones.
1 1¼" bar knob and scale.
1-1½ A; 1-4½ C; 1-22½ B-batts.
Panel, base, hardware.

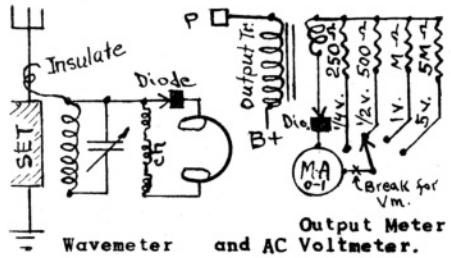
The above circuit is given to get you acquainted with Diodes and at the same time, rig up a little set that works a speaker. DX isn't entirely out of the question, either, with our Celluloid coils. An adjustable Xtal may be used if you want more DX.

RF choke may be 2½ mhy. but a larger one is better.

For 5-RF coils, use a 5-prong wafer socket.

Diodes have lots of uses. They work good in a Harkness Reflex - where we used to use Fixed Iron pyrites. Because manufactured Diodes have their contacts welded together - they cannot burn off like the Iron pyrites used to do. In this circuit, the induced current is very low - so no harm can come to the crystal.

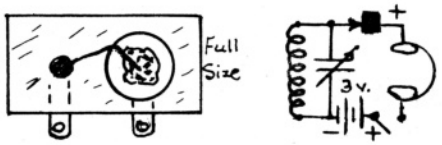
Below are two more adaptations of Diodes. Using the same principle as above - we can rig up a



Wavemeter and AC Voltmeter. Output Meter

very useful wavemeter so you can spot your DX stations on your dial. It can also be used as an indicator, or monitor, for a Xmtr. The other shows a Diode as a rectifier for an output meter, or used as an AC voltmeter.

MRL SEMI-FIXED CARBORUNDUM XTAL.



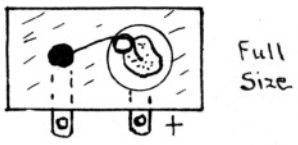
Our new semi-fixed Carborundum is a neat little unit. Drawing shows full size. It is mounted on clear, low-loss Plexiglass. Due to our new method, a larger crystal surface is exposed. In case you want to make an adjustment - just move the catwhisker sidewise. The up and down pressure is not too important.

Tiny lugs are fastened so you don't heat the crystal in connecting. The entire unit may be dismantled by removing two small nuts. Stability is due to the large c/w it is possible to use with this crystal.

You may use the simple circuit above - or the one shown for an adjustable Carborundum on page F-1. It gives good volume on 3 volts, but others may take 1½ v.

We use only the best crystal material- and weak ones are discarded. We get magnetic speaker volume on locals. They are tested in actual operatiin.
9-4. MRL Semi-fixed Carborundum Crystal, packed. 2 oz. .50

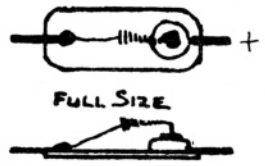
MRL SEMI-FIXED SILICON CRYSTAL.



Made similarly to MRL semi-fixed Carborundums, except entirely different type of catwhisker. Silicon requires a much finer point than Carborundums. Very sensitive. Easy to adjust. Uses no battery. Easy to mount.
9-42. MRL Semi-fixed Silicon..50

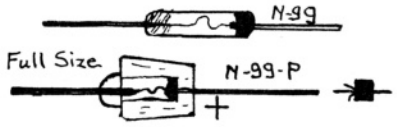
MRL SEMI-FIXED IRON PYRITES no longer being made. Any diode can be substituted for this crystal.

SEMI-FIXED GALENA CRYSTAL.



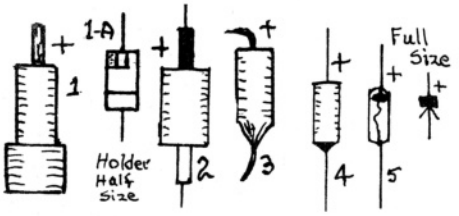
A very sensitive, easily adjusted crystal. We know of no other semi-fixed Galena on the market. The catwhisker holds the adjustment well.
9-45. Semi-fixed Galena. .45

FAMOUS N-99 GERMANIUM DIODE.



This is a very sensitive Germanium Diode. For a report on its DX properties - read DS Vol. 1, page 10, for world-wide reception. We bought all the mfr. made - so get yours before the supply runs out. We have 2 types - the glass N-99 and the plastic enclosed type N-99-P. One is as sensitive as the other.
9-52. N-99 Germanium Diode....45
9-52-P. N-99-P Plastic case...45

FACTORY-MADE CRYSTAL DIODES.



Above drawings show actual sizes. These are pre-adjusted crystals, with welded catwhiskers, and work good in any Xtal circuit. They are not critical in operation until you get into hi-frequency tube circuits.

From a law in Physics- "no two things are exactly alike" - applies especially to semi-conductors. Even the same types seem to vary considerably. We recommend your trying different ones on weak DX stations until you get the best match for your circuits. In many cases the "A" types are a little different, altho not noticeable in Xtal circuits. Try reversing the polarity on DX stations for best results.

They have good volume. Some may be improved with a slight addition of battery current as per the Carborundum layout on page F-1.

Selectivity is not as good with these as the adjustable types of Steel galena, Iron pyrites, Silicon and Carborundum - possibly due to the welded c/w.

Previous CAT. numbers are now omitted - just order by type No. Advise if we may substitute. Watch the "Flyer" for changes in this list. Note the many price reductions from previous lists.

IN21. (1) Silicon. 3000 mc. converter or mixer. General purpose use.....50
IN21-B or IN22. (1) Same.....50
IN21 or IN22 Holder (1-A). With pigtail ends. CAT.9-50.....10
IN34-A. (2) Germanium. Similar to 1N66, 1N69, 1N294. General purpose. 60 volt maximum....50
IN35. (2) Germanium. Similar to 1N34-A, CK-709. General purpose in all sets. 60 volts..50

DIODES, continued

1N39-A. (2) Germanium similar to 1N68. Hi-reverse voltage. 200 volts. General purpose.....50

1N52. (2) Germanium. Similar to 1N67, 1N297. General purpose. 70 volts maximum.....50

1N60. (4) Germanium. Similar to 1N295. Video detector, medium level. 25 volts maximum.....50

1N63. (3) Germanium. Similar to 1N67. High back resistance. Harmonic distorter for UHF-TV. General purpose. 100 volts..50

1N64. (2) Germanium. Similar to 1N295. Video detector, general purpose, 15 volt maximum....50

1N82-A. (2) Silicon. UHF-TV mixer. Low-noise. 5 volts.....50

1N128. (5) Germanium. Hughes. JAN. Similar to 1N294. Miniature. General use. 40 volt..50

1N295. (4) Germanium. Similar to 1N60, CK-706-A. Video detector. General purpose. 40 volt....50

CK-706-A. (4) Germanium. Similar to 1N295. Video detector or general purpose. 40 volts...50

PLUS SIDE is for best conductivity, or the crystal side. Usually labeled "cathode" or where the line or red dot shows.

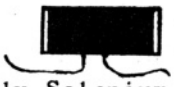
Rectifiers

All crystal Diodes, Transistors, tubes, etc. are semi-conductors or rectifiers. However, we usually call a rectifier a device that rectifies AC into useable DC for power supplies.

SELENIUM RECTIFIERS.

For 100 ma. types and a full description, see CAT. sec. N. 65 ma. for smaller rigs, using isolation transformer, etc. in smaller space. 3-20. 2 oz. .90

SUN CELLS or BATTERIES.



Usually Selenium. Work with any direct light. Sunlight generates about .5 volt to operate a Transistor set. Full directions and circuit with each cell.

#1 Sun Cell. 3-3. 2 oz. wt. .50
#2 " " larger. 3-12. 1.00

SILICON RECTIFIERS.

Miniature rectifiers for small space. More data on Silicon rectifiers in MRL HB-10.

200 v. input type, for small rigs with isolation transformers, etc. 3-16. 2 oz. 1.00
400 v. input. 3-17. 4 oz. 1.25

Md., Baltimore, H.G.: "Your MRL Xtals are best I ever bought."

MRL PLANS FOR BUSY HANDS

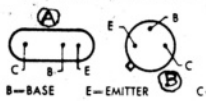
Transistors

Transistors are being used more every day. In a good circuit - one Transistor can operate a PM speaker on loud locals. Our TRX may be used in most circuits - for general purposes. Watch "Flyer" for changes in our listings.

Be sure to check dot, or basing diagram, before turning on the current, or it may damage the TRX. The dot is the collector. Leads may be soldered but hold them with pliers as a heat sink to protect the unit.

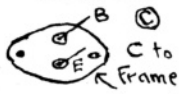
The number refers to type; the letter to basing diagram. Note our low prices on these units.

BASING DIAGRAM



B—BASE E—EMITTER C—COLLECTOR

BOTTOM VIEW



PNP TRANSISTORS.

2N155. (3-C) CBS, or similar makes, of Germanium power TRX. Takes 6-12 volts at ½ amp. but will drive a 12" speaker. Claim 8.5 watts output. 30 v. max. v. Power gain 30 db.....1.10

2N369. (2-A) Texas. Germanium. Similar to GT-81, 2N109, 2N403 Gen. use. 30 v. 1.3 mc....1.10

2N1265. (2-A) Sylvania. Germanium. For general use. 10 v. max. Current gain 25.....99

GT-222. (1-B) General TRX. Germanium. For HF and general use and similar to CK-722. 12 v. max. Current gain 20.....1.10

CK-722. (2-A) Raytheon. Germanium. Similar to GT-34, GT-222, 2N34, 2N107, etc. General use. 22 v. max. but usually operates on 1½-6 v. Current gain 45. .6 mc. Alpha cut-off. .99

CK-768. (2-A) Raytheon. Germanium. HF, regenerative and general uses. 15 v. max. Current gain 20. 2.5 mc. cut-off. 1.50

X-771. (3-C) Power TRX, similar to 2N155. Circuits incl. 1.15

NPN TRANSISTORS.

2N233. (2-A) Sylvania. Germanium for HF, regeneration, general. 10 v. max. 4.5 current gain. Good for direct stages.....99

2N364. (2-A) Texas. Ger. Gen. use, Sim. to 2N444. 30 v. 2.5 mc. NPN's for regeneration....1.10

2N438. (1-B) CBS. Ger. Gen. use. Regeneration at HF. 30 v. 3.75 mc. cutoff frequency.....99

TRANSISTOR MIDGET BYPASSES. See Section J on Condensers.

MINIATURE RESISTORS, see R.

TRANSISTOR Accessories

TINY TRANSISTOR TRANSFORMERS.

Well made. Weight about ½ oz. Permalloy steel cores. Fine wire vacuum impregnated. TRX do not draw enough current to operate the ordinary output transformer into a PM speaker. Therefore, we must use these special transformers to balance the output impedances of Transistors.

Driver.	20K: 1K Imp...	24-31.	1.00
Input.	100K: 1K " ...	24-28.	1.00
Input.	200K: 1K " ...	24-29.	1.00
Input.	500K: 1K " ...	24-30.	1.00
Driver.	10K: 2K-ct ...	24-27.	1.00
Output.	500-ct: 3.2...	24-17.	1.00
Output.	1K: 8 Imp....	24-26.	1.00

BATTERIES and SUPPLIES.

(A) Burgess Flashlite Battery. Best you can buy. 1¼ x 2¼. Sealed in steel; chrome protected. #2 Flashlite Cell. 3-1. 4 oz..20

Burgess pencells, substituted for Eveready. Latter cannot be soldered on negative side without becoming intermittent. Burgess solder right to zinc. Price is same as CAT. 3-7. No. Z .15

Now a smaller pencell in Burgess. #7. 3/8" x 1-3/4" long for you midget mfrs. 3-14. #7... .15

(B) 4½ Volt Mercury Cell. 5/8 x 2". Ideal for TRX sets as lots of voltage. 3-2. 2 oz. wt. .50

(C) Battery Holder for Mercury or Penlite cell. Lug on each end to solder. New Price. 3-10. .20

Crystal Stands

ASSEMBLED STAND and CRYSTAL

Fig. 1

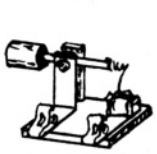
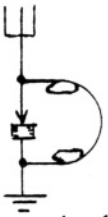


Fig. 2



The universal joint on swivel arm provides a quick, accurate adjustment on any point on the sensitive crystal. Unit is completely assembled with crystal, cup, base, catwhisker and two clips for attaching wires.

We suggest soldering the phosphor bronze catwhisker to the

arm (X, Fig. 1). Then, wrap a piece of MRL fine catwhisker (CAT. 9-13) around this spring and bring down to a point for a contact with Xtal. This works better than the heavier contact.

Often advertised as "a complete Xtal Set for 25¢" when attached to phones, Aerial and a ground (Fig. 2). In this hookup, the nearest, or loudest station will predominate, with others in the background, unless some form of tuning (Fig. 3) is used to select stations. For further information, read about K/D stands below. Regular list price 55¢.

Assembled Stand and Crystal. 9-17. 4 oz. weight.....35

KNOCKED/DOWN CRYSTAL STAND.

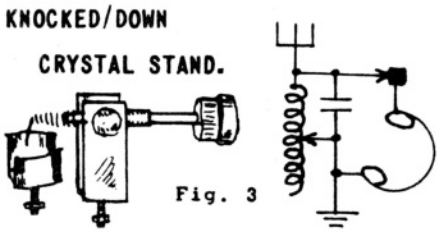


Fig. 3

Same as assembled stand, except no crystal or base. Mount in holes 1" apart, in a convenient position on panel. Or, it may be mounted on a base (see below). Sometimes the knob may be a little loose. Spot a drop of solder on shaft and drive the knob back on. Also solder Phosphor bronze spring and add MRL c/w as shown in Fig. 1.

Use as in Fig. 2, 3 or any circuit shere a good adjustment is required. For further details on Fig. 3, see DP-33 "MRL #19 Pocket Radio."

List price of stand is 25¢.

K/D Stand. 9-14. 2 oz.....20

CRYSTAL SET CATWHISKERS

MRL fine Catwhiskers are used for long distance reception with Steel galena, when wrapped about a heavier Phil. type (see Fig. 1). The heavier brass MRL type is used on Iron pyrites, Silicon and Carborundum. They come assorted 5 c/w to an envelope.

MRL Catwhiskers. 9-13. (5).....05

Philmore type are now made by us. Very springy brass. Fit all stands. Should be soldered (X-Fig. 1) to arm. Work good on MRL Carborundum, Silicon or Iron pyrites. Use MRL fine c/w on the Steel galenas. Packed two to an envelope. List price 20¢.

Philmore Type C/W. 9-35. (2)..10

MRL Nickel-Silver Catwhiskers. Very fine. Good for DX. Try them. 9- 9. Nickel-Silver c/w Ft....05

MRL Phosphor-bronze Catwhisker Wire. Try a variation and see how it works on DX. Many recommend it. 9-53. PB Wire. Ft. .05

MRL K/D STAND BASE.

Fibre, or Bakelite base. Holes drilled just right to fit the K/D stand. Other uses.

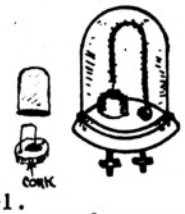
K/D Stand Base. 9-15. 1 oz. .05

MRL CRYSTAL CUPS.

CAT. 9-16.....10

To hold the crystal in place. Furnished with necessary screws. May be bent in to hold unmounted crystals, if desired.

ENCLOSED STAND and CRYSTAL



Adjustable, fine spring catwhisker, Cover fits over to keep out dust. Furnished with super-sensitive crystal. Screws come out at base for mounting upright on the panel. Improves the appearance of a set and keeps dust from crystal.

List price is 90¢.

Enclosed Stand with Crystal. 9-18. 4 oz. weight.....50

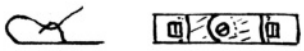
GLASS COVER FOR ENCLOSED STAND.

Fits above stand. If you like it over a regular Xtal - mount a cork under the holder and slip the glass cover over it.

Glass Stand Cover. 9-19.....10

CRYSTAL Accessories

MRL FAHNSTOCK CLIPS



Well termed "quick binding posts." Push the end down; insert the wire, and the clip does the rest. Heavily plated, spring brass clip always gives a good clean contact. Be sure your wire is clean before inserting. Been used on Xtal sets for years. As we do not sell double clips, you may put two together as shown.

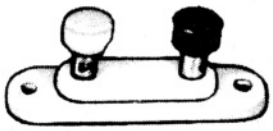
1" Fahnstocks. Hole will take up to #8 screw. 9-28. Doz. .20

3/4" Fahnstocks. Now used as standard clips. May be mounted with #6 screw or eyelets. Solder onto A-G leads. 7-53. Doz. .15

½" Fahnstocks. Fine for small space. Ideal for coil mounting, or miniature sets. Will take #6 screw or eyelets. 9-29. Doz. .15

Eyelets for above clips will go thru 1/16" stock and clip. See Sec. H for more. 13-161. Doz..06

MRL #7 LOADING COIL. 7-106. Wound on 2XM Celluloid form is $1.00. On Bakelite $1.50.



TWIN BINDING POSTS

All Molded Plastic. Both posts completely insulated. Mounting centers 1 13/16". Base is 2 3/16" long, 11/16" wide. Supplied with red and black knobs. 4-11. Double BP .15

INSULATED BINDING POST TERMINALS

Molded plastic. Same as above.

Knurled grip, removable head. Hole provided in stem for wire or phone tip connection. Overall length when fully opened 1". Supplied with hex nut and solder lug. Available in red, black, pink or yellow.

4-12. Midget BP. State color .09

MRL BINDING POSTS.

Heavily nickeled. Standard sizes. Insert a wire, or tip, and screw the head top screw down, with fingers or screwdriver to make a fast connection. We suggest using a lug and lockwasher under screw when making soldered connection to leads. When securing, hold binding post steady with an awl, or nail, pushed thru hole. Be sure they are tight.

6-32 Binding Post. 4-1. Each..05

6-32 Head Top Screws. To fit the above posts. 4-23. Dozen....10

NEW 6-32 HEAD TOP SCREWS FOR BP.

We have obtained some 6-32 by 1/8" binding head machine screws to replace our ¼" HT screws. Work better than ¼" sizes. May screw by fingers or screwdriver. Also work good on terminal strips and under-panel wiring. Many uses.

Good price. 13-173. Dozen .10

8-32 Binding Posts. More substantial use. 4-2. Each.....05

8-32 Head Top Screws to fit the above posts. 4-7. Dozen..... 10

MRL KNURLED NUT BINDING POSTS.

These binding posts are used in a small space, and wire fits under screw. Use lug and lockwasher under screw for good connection.

6-32 Knurled Nut Binding Post. 4-28. 2 for 05

6-32 Knurled nuts for the above posts. 4-22. Dozen.....15

8-32 Knurled Nut Binding Posts. 4-5. 2 complete posts.....05

8-32 Knurled Nuts for the above binding posts. 4-6. Dozen...15

REMIT in any convenient form. We are easy to get along with!

BINDING POSTS, continued

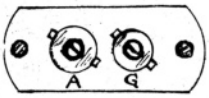
BAKELITE BINDING POST HEADS.

These Bakelite Tops fit 8-32 knurled nut binding posts. Useful for indicating circuits by coming in 2 colors. Drawing is full size.

8-32 Black Binding Post Head. CAT. 4-26, each.....10

8-32 Red Binding Post Head. 4-27, each.....10

"AERIAL-GROUND" TERMINAL STRIPS.



Neat Bakelite strip with holes for mounting on chassis or up on bushings. Leads solder to lugs behind. Heavily plated screws secure wires. Engraved "A" and "G." Drawing half size. Improves looks of a set.

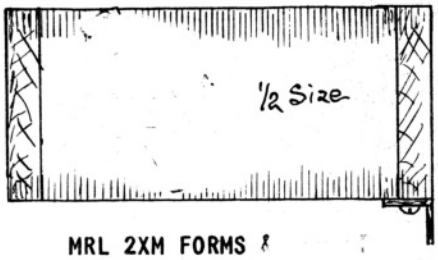
A-G Terminal Strip. 4-25.....15

Plain Terminal Strip. No A-Grnd. markings. 4-24. Each.....10

More terminal parts, Sec. W.

COIL PARTS

MRL CELLULOID CRYSTAL SET FORMS



MRL 2XM FORMS

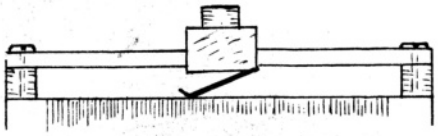
Most efficient Crystal set DX coil made. We have sold thousands, with ever-increasing long distance records as a result. It is specified in most of our MRL circuits. Most distance records have been made with sets using this form. Due to a thin wall (.015"), Celluloid makes a most efficient form, with a very Hi-Q. Absorbs very little moisture. Fibre rings in each end, re-inforce it, so up to #14 wire may be wound without caving in. This may be used by Amateurs in Xmtg. coils. Being thin, Celluloid puts so little loss material in the field that highly efficient results can be expected. As an experiment - wind a coil on a fibre tubing 2" in diameter. Now - wind one on a 2XM using the same kind of wire. Note the difference in operation and tuning. MRL 2XM forms are 2" in diameter by 4½" long. Drawing is half-size. We now use a 3/8" ring in each end - so sliders may be put on easily, or mounted on either end. A bracket [illegible] are also furnished.

When winding- secure first and last turns with tape. Paint the edges with the cement.

MRL 2XM forms are much more economical and lighter than Bakelite or other plastic materials for coils. If you are going to build a first-rate set, by all means, make a good coil, as it is the heart of your rig. More data on Celluloid in Sec. E.

2XM Cello. Form. 7-40. 6 oz. .35

MRL COIL SLIDER PARTS



MRL Sliders and Rods are made only by us as we could no longer obtain them from mfrs. We have a very smooth-operating slider. It fits a 3/16" square rod. Because crystal sets are not critical in tuning - a slider works OK.

Due to the wear on smaller wire - the sizes from #20-28 are best. Enameled is mostly used, but DCC is very good - as you just remove the cotton and a good contact is obtained. When winding your coil - leave about 3/4" at each end for mounting slider and so slider contacts the end of coil. Cover edges and each side of path with MRL Light Coil Cement, and let dry.

Center-punch the rod 1/8" from each end; drill with a #33 drill to take a 4-40 x 3/4" binding head screw thru form as shown. Use a fine file, or sandpaper to clear a path of contact. Brush off the dust and vaseline it lightly for smooth contact. You may use several sliders on one coil as per our MRL #12 (DP-69).

MRL Slider. Fits 3/16" square rod. 9-25. 1 oz. wt.....20

Slider Rod. 3/16" sq. Per lineal inch .03. Example: 6" is 18¢; 4½" long is 14¢. CAT. 9-26.

Holes drilled in each end for 5¢ per hole - a new service.

SPECIAL. A few rods ¼" square with holes each end. Each...05

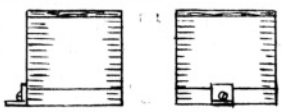
¼ x ¼" Fibre Bushings to raise slider. 13-137. Dozen.....20

4-40 x 3/4" Binding Head Machine Screws. 13-47. Dozen.....10

4-40 Nuts. 13-2. Dozen.....11

MRL P2XM FORMS

¼ Size

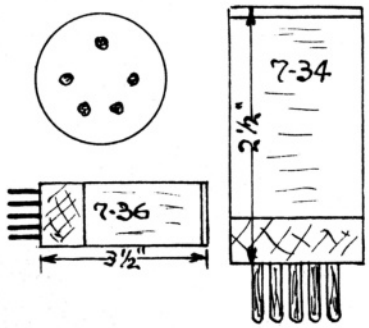


These forms are identical with 2XM, except they are 2" long instead of 4½" and have a small ring in one end. Often substituted for 2XM when smaller forms are needed. Besides Xtal sets, they are used in Antenna couplers (MRL 7-43) with coils plugging inside. Also used for rotors inside coils, etc. [illegible] u

MRL P2XM Celluloid Forms, [illegible] 7-39. 2 forms.....35

Single P2XM, no cement.....20

MRL Hi-Q CELLULOID PLUG-IN FORMS.



These are very low-loss Celluloid plug-in coil forms - and treated more fully in Sec. E. However, they are specified in several of our all-wave crystal sets, as #26, 28, etc. when you want to change bands. Hundreds of these forms have been used since 1932, when we put them on the market. Many big Radio men as Sargent, Jones, etc. have approved Celluloid forms. We furnished plug-ins for Sargent's kits for several years. The base and ring are inserted under hi-pressure to make them rigid. After coil is wound and tested, paint strips of MRL Light Coil cement (7-57) over wire to hold it in place, and help re-inforce the form. Even tho .015" Celluloid - they are very strong. No cement is furnished. (w/s means winding space.) Diameter 1-7/16".

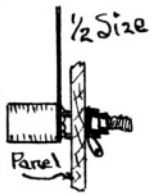
MRL 4-prong Plug-in Form. W/s 2½". Standard size.	7-33.	.20
MRL 5-prong. 2½".	7-34.	.20
MRL 6-prong. 2½".	7-46.	.20
MRL 4-prong, Long form. W/s 3½" for long waves.	7-35.	.25
MRL 5-prong, long.	7-36.	.25
MRL 6-prong, long.	7-48.	.25

BAKELITE and FIBRE Coil forms in Section E.

COIL CEMENTS, see Section R.

MRL SWITCH LEVERS

½ Size



Switch levers have been used almost from the start of Wireless. We used to pay $1.50 for a big clumsy lever. Today about the only types are large electrical switchboard types. So, MRL is the only source of this handy little switch lever.

We long felt the need for a midget switch lever that is efficient, yet works in a small space. Rear-working inductance switches may be used - but they are far more expensive. In most cases it is easier to wire up a coil from switch points.

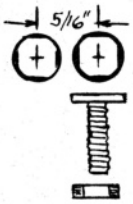
CRYSTAL COIL PARTS, cont.

Our levers are 1" radius and using springy Phosphor-bronze, which holds its shape, for the lever. The 3/8" insulated knob seems to be about right. A lug fits behind the panel, and then two nuts - one being a locknut.

Scribe your 1" radius on panel before drilling a snug #6 hole. Bend the lever down a little to make it tight. Place a 3/16" wrench around the nut and tighten the ¼" locknut. Lever should work so good contacts are made.

MRL Switch Lever. 9-20. 1 oz..20

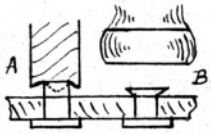
MRL SWITCH POINTS and NUTS.



These are shown at full-size. Made to our specifications. Doubt if you can get them elsewhere. Brass and heavily nickel-plated. Fit close to panel - 1/16". Scribe a light circle with 1" radius. Mount the points 5/16" on centers. Points are slightly squared 2 make them easier to hold with pliers. We advise using a nut driver wrench on nuts in rear. You may use lugs under nuts or solder directly to the ends - which we do. Be sure your wire sticks. Use our #22 stranded plastic hookup as described below. Lightly vaseline points for smooth action. Sold in dozen lots, with nuts, only.

MRL Switch Points & Nuts. 9-21.
Per dozen lots..2.oz.....15
Extra nuts. 13-3. Dozen.....10

MRL RIVET TYPE SWITCH POINTS.



Brass; heavily nickeled. These points are easier to install, altho a little harder to solder than regular switch points. Use the same layout method as above. Lay head of point on a solid metal surface, and push rivet up thru panel. From the back, use a rivet punch to drive them down (A). Or, you may use a large center punch, and flatten down with a hammer (B). When all the points are set, good and tight, apply a tiny speck of soldering paste to the hole, and tin with the soldering iron, until all R tinned. Hold wire down with a screwdriver until it cools. Attempt to pull wire off, to test its security. Be sure to clean off any paste, etc. between the points with Carbon tetrachloride or benzine. Furnished in three sizes. May fit other thicknesses by countersinking the back of the holes, as noted below.

MRL Rivet Switch Pts. for 1/8" or 3/16" Panel. 9-22. Doz. .08
MRL Rivet Switch Pts. for 1/4" Panel. Also fit 5/16" if you countersink. 9-23. Dozen....10
MRL Rivet Switch Pts. for 5/16" Panel. OK for 3/8" panel if U countersink. 9-32. Dozen....10

THERMOPLASTIC WIRE FOR POINTS.

#22 stranded plastic-covered. Ideal for sw. pts. to coils. Is easy to skin. Tins easily. Makes a neat job. 26-29. 20 ft.....30

MRL NEW METHOD SWITCH STOPS.

We prefer these lug type stops to the previous ones with nuts as they take up less space on the panel. Place the "P" lug under the first and last point before fastening. Bend them up at right angles to the panel and clip off the end. Extra lugs may be used for wiring jobs.

MRL New Method Switch Stops. 26-20-P. 20 in pkg. .15

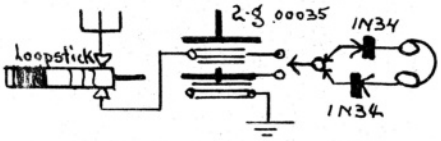
Crystal Receiver *Coils*

MRL CRYSTAL SET COILS.

All coils made according to the latest data obtainable for best operation. Tapped when necessary. Some on Bakelite, but mostly on Celluloid forms. Rotors included when specified. Postage is always extra.

Circuit & Coil	CAT.#		Wt. Lb.	MRL
1 8-9	7-100		½	1.00
1 QRM	7-42		¼	.50
2, 2-A 10-11	7-101		½	1.00
4 3-1-7	7-102		½	1.50
5 3, 5	7-103	(2)	1	2.00
6 1-2, 2-3	7-104		½	1.50
6 8-9	7-105		½	1.00
7 Loading	7-106	Cello.	½	1.00
8 1-2-3-4	7-107		½	1.50
8 Large RFC	6-11		¼	.35
8 Medium RFC	6-2		¼	.30
9 7-9-11	7-108		½	1.50
10 Country	7-169		½	1.50
10A City	7-109		½	1.50
11 1-2	7-110		½	1.50
11 3-4	7-111		¼	.50
12 3-5 coil only	7-112		1	1.50
13 1-3	7-113		1	1.50
13 QRM	7-42		¼	.50
15 1, 5, 2	7-114	(3)	2	3.50
17 3-5	7-115		½	1.50
19 Coil only	7-148		¼	1.00
20 1-2, 3-5	7-149	(2)	1	1.50
21 7-8	7-150		¼	.50
21 9-10-11	7-151		½	1.50
21 Variocoupler	7-172		1	2.50
22 Same	7-172		1	2.50
23 QRM	7-42		¼	.50
23 9-13-5	7-153		½	1.50
24 3-2-7-8	7-154		½	1.50
24 Loading	7-155		½	1.00
25 7-8-5-6	7-156		½	1.50
25 QRM	7-42		¼	.50
26 4 RF Coils	7-16		½	3.00
27 1-2	7-158		½	1.00
27 5-6	7-159		½	1.00
28 4 RF Coils	7-16		½	3.00
28 Loading	7-168		½	1.00
29 Variocoupler	7-172		1	2.50
29 Loading	7-160		½	1.00
30 2-QRMs	7-42	Each.	¼	.50
30 5-6-7-8	7-162		½	1.50
31 4 5-C Coils	7-127		½	3.00
33 2 AC-DC	7-44, 5		¼	1.00
34 IF Transfr.	7-116	Ea.	½	.85
35 1-2	7-163		½	1.00
35 Variocoupler	7-172		1	2.50
37 1-2	7-157		½	1.00
38 1-2-3-4	7-165		½	1.50
39 1-2-3-4	7-175		½	1.50
40 IF Transfr.	7-117		½	.85
41 L-1 or L-2.	7-176	Ea.	½	1.00
41 L-3 on Bak.	7-177		¼	1.00
42 AC-DC coils	7-44, 5	(2).	½	1.00
43 Bucking Coil	7-178		½	1.50
R.E. Oct., 1952.	7-180		½	1.50
Flextal QRM	7-42		¼	.50
Same, A	7-152		½	1.00
Same, B	7-161		½	1.00

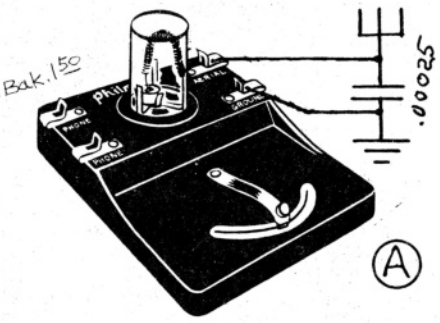
VARI-LOOPSTICK ANTENNA COIL



Here is an uncanny circuit for a Loopstick and 2-gang variable. You may use a SPDT toggle switch for a change in selectivity. One side of SPDT hooks to one stator and the other to frame of cond. About the simplest, selective circuit out. Other data on these Loopsticks - see Section E.

MRL QRM Coils, Variocouplers, and other coils, see Section E.

CRYSTAL Receivers



PHILMORE SUPERTONE CRYSTAL SET.

A well-constructed set for a low price. Single control. The enclosed stand keeps dust and grease off crystal, making it last longer. Mounted in Bakelite case - with nickeled parts.

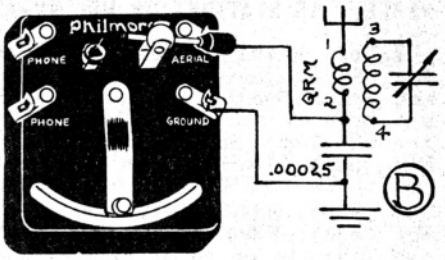
If you add a .00025 mica cond. (8-19) across Antenna and Ground it will increase the range of the coil and make it more selective. A MRL QRM Coil may also be added as (B). Use 50 ft. Antenna in city; 100 ft. in country. Some good results have been reported.

CRYSTAL SETS, Continued.

Exclusive with us: We dismantle these sets and check for shorts before shipping. List $2.25.

Philmore Supertone. 14-5. 1# 1.50

PHILMORE LITTLE WONDER XTAL SET.



Smaller than the Supertone, but otherwise the same, but with open-type stand. Also in Bakelite case. A very sensitive Steel galena with each set. Wrap one end of our fine catwhiskers (9-13) around the heavy one.

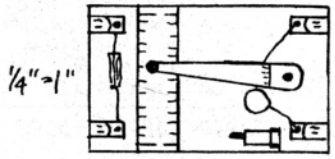
Sketch shows addition of a MRL QRM Coil (7-42) shunted with a 25-280 trimmer (8-117) - all in series with Aerial. This works very good for cutting stations. Same .00025 mica cond. may be used. We also check these sets for operation. List price $1.75.

Philmore Little Wonder Crystal Set. 14-4. 8 oz. wt..... 1.15

"PEPPY PAL" BEGINNER KITS.

We are now selling these kits to beginners and others wanting a one-nite project. While inexpensive - they will give good results. Directions make them easy to assemble. All except the Crystal slider set and oscillator use Loopsticks for tuning.

PEPPY PAL SLIDER CRYSTAL KIT.



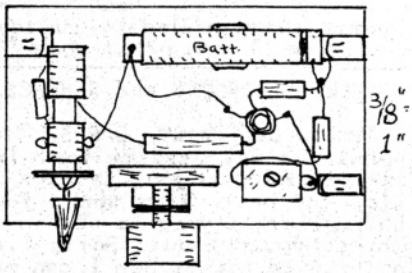
Assembles on a 3x5 base. Has been easily constructed by hundreds of Fans with good results. Uses crystal Diode for detector. Sliding lever on coil tunes in the stations. All new parts. The Fahnstock clips make it easy to hook onto. A good one to start on - requires no soldering.

14-10. PP-2 Xtal Kit. Ppd. 1.57
14-10-W. Wired & Tested. 2.07

PEPPY PAL TRANSISTOR KIT.

This little set mounts neatly on a 3x5 base. A sensitive Transistor acts as a detector. Because they draw such little current - the pencell lasts a long time, altho inexpensive.

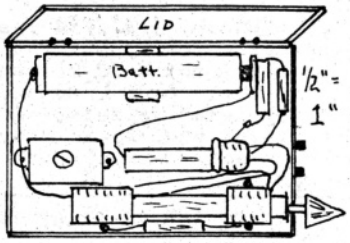
It uses an adjustable Loopstick with a knob. Balance of tuning is done with a .00035



midget variable condenser and a knob. It gives good selectivity and sensitivity on local and DX stations. A slight amount of regeneration helps the DX stations to come in. It can work on a short Aerial. If in the country, a ground may be added for DX by hooking to the side of Loopstick opposite the Aerial input.

14-11. PP-7 Trans. Kit. Ppd 3.65
14-11-W. Wired & Tested. " 4.65

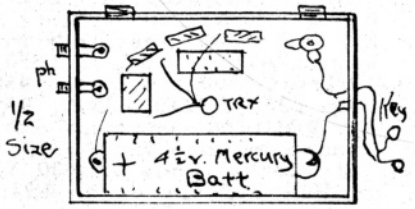
PP-6 REFLEX TRANSISTOR KIT.



This is a neat little pocket Transistor set placed in a 2x3 plastic box and lid. It uses reflex and regeneration to make a very sensitive little rig. Uses a pencell for power. Loopstick tunes with a knob. Trimmer condenser for further adjustment. Ample room for parts so not hard to rig up. Furnished with Aerial lead and clip which works fine on locals. For more pickup, use a short outside Aerial.

14-16. PP-6. Reflex. Ppd....2.29
14-16-W. Wired & Tested.....3.59

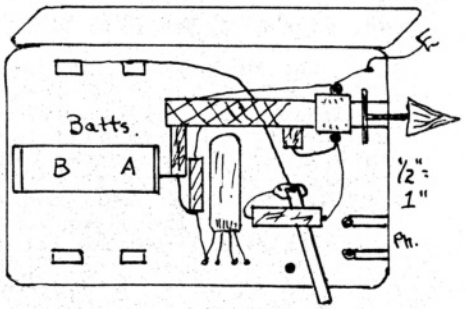
TINY TRANSISTOR CODE OSCILLATOR.



Here is a little oscillator in a plastic box 3" long. Very loud signals. Works on 4½ Mercury or 2 pencells; last long time. Lugs attach to key; phones plug in. Batts. extra. All wired up and tested. 14-15. Postpaid.....2.00

PEPPY PAL 1-TUBE PORTABLE KIT.

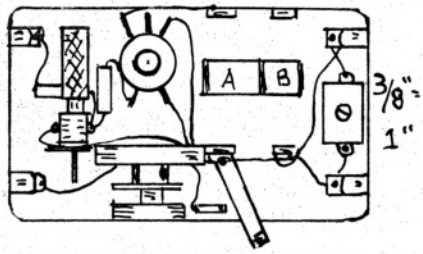
Very compact, sensitive and selective. Uses Loopstick and a fixed condenser for tuning. The drawing shows essential parts. Includes all parts except batts. - which may be hearing-aid type. Sub-miniature tube included. All



parts riveted on a separate base so little soldering required. In a neat plastic box. Any type of Aerial is OK. Includes tube.

14-12. PP-5 1-Tube Portable Kit, with Tube. Postpaid..... 2.62
14-12-W. Wired & tested..... 3.62

PEPPY PAL 1-TUBE BREADBOARD KIT.



Uses a very selective and sensitive super-regenerative circuit. Loopstick and variable condenser tuning. Loopstick puts the set on BC band. A trimmer condenser controls regeneration and tone. A sensitive Acorn tube goes with kit, and operates on a pencell and hearing-aid batt. Batts. not furnished. Built on a 3x5 base. Easy to build.

14-13. PP-3 1-tube Breadboard Kit. Postpaid to you.....3.65
14-3-W. Wired & tested.....4.65

Fun-to-Build Crystal Sets

MRL CRYSTAL SETS.

When considering buying a good DX crystal set- be sure to check over our sets in Sec. K. It usually pays to spend a little more and get a practical crystal set. Our MRL sets are made with large low-loss coils, variable condensers, good spacing, arrangement and construction. You can't get DX on a small coil in a crystal set - unless you use amplification with tubes or Transistors.

We realize we should have more Xtal set kits but it takes a lot of time to get them up. It is possible we may have more soon.

Because our DPs (Sec. D) are so easy to follow- it is easy to list the parts you need, and to lay out the set. Many buy them in kit form, wire them and sell to their friends.

MRL HANDBOOKS (Sec. A) are Ur best bets for good, meaty info. on Xtal sets, etc. They seem to like our way of explanation - so they tell us!

As we've said before - there's a lifetime of fun in small sets.

BUY FROM MRL & GET FLYERS FREE.

MRL #2-A XTAL SET GETS OUT.

Ark., Hot Springs, V.S.: "Just finished MRL 2-A and it works fine. There are many mountains around here, but last nite between 4:30 and 4:45 I picked up Pittsburg (800); Detroit (750); WLW (550); Del Rio (650) and 4 others. Some of these sounded like locals. Also separates local stations, cops, Hams, etc. I've never been able to do that on any other Xtal set.

"My Aerial is 100 ft. long and 25 ft. high. I use Steel galenas most of the time.

"I like the way you pack stuff I got stuff from Chicago in a box 4 times too big, and broken at that. Ur literature fine."

MORE DX ON MRL I-TUBER (DP-29).

Calif., Inglewood, G.A.: "Many thanks for publishing our report in RB-29. Here are some additions to our long list: ET3AD, Ethiopia (9200); HS1SS, Siam (8000); CN8BA, French Morocco (6000); VK4FI, VRI, Gilbert Is., KX6BE, Marshall Is. (4800); OA7AP, Peru (4000); HI6EL, Dom. Rep. (3200); VP7NK, Bahamas (2800)." (Ed. See in RB-29 for a big log on this 1-tuber (DP-29). You'll be much amazed at the distances.)

MORE DX ON MRL 2-A CRYSTAL SET.

Canada, Ont., Barrie, J.W.: "Just completed 2-A set 2 weeks ago. Since have logged 14 different stations - 3 of them over 500 miles away. I think you'll agree that is good. Thanks for your rapid and courteous service - here's another order."

AN OLD TIMER LIKES OUR BOOKS.

Mo., St. Joseph, C.M.R.: "I am 52, and have made Xtal sets for 40 years. I have Boy Scouts and Cub Scouts that make Xtal sets. You have the best books on sets that I have seen. I have many of your Flyers - and the boys have about 'done in' your Catalog. I have ordered several times."

NORTH OF ARCTIC CIRCLE.

Canada, N.W. Ter., Melville Pen., L.L., Federal Electric: "I am your most Northern customer. Am north of 69 Lat." (Ed. Mr. L. sent a picture of the snow and some barges. He also took along over $10 worth of MRL literature for those long nites. Hi)

BUILDS SEVERAL MRL #2 and 2-A's.

Md., Salisbury, F.B.T.: "Rec'd Trimm Pro. phones - they really are good. Picked up WGEO on 9530 Kc. and she came in like local on #2. Loads of Hams, aircraft, police, marine, etc. Just no better made. I built 3 of Ur #2 and a 2-A, but don't want to part with them! Ur company is the only one I know for us small time 'dabblers.' Ur friendly and prompt service made a customer out of me. U can print this."

LIKES HANDBOOKS and SERVICE.

Texas, Ballinger, C.W.S.: "Have spent the day reading your fine literature. Find your service and lit. the best. Have spent years and dollars trying to obtain the things you put out. Sorry I did not see ad sooner. Now I can mail orders with complete confidence, that I will be dealt with fairly and promptly. Your last order was much more than expected."

FROM FAR AWAY CEYLON.

Ceylon, Colombo, B.T., St. Benedict's College: "The boys sure go for your literature and read it all. Also like your kits and Radio parts."

STARTS WITH A #MRL NO. 2 CRYSTAL.

N.D., Upham, T.A.,: "A year ago I knew practically nothing about Radio but I got a #2 kit and put it together. Now I am working with regenerative sets, and have come a long way. As so many have said - your friendliness sure does pay off."

MRL I-TUBER (HB-4) DRAGS THEM IN

Ga., Macon, D.S.: "Just a few lines to let you know the 1-tuber is all the boys claim. Getting out of this location, on any Radio is good. I get Moscow (5600) every nite. Also Switzerland (4800); London (4400); Ecuador (2400) and many more. I have to reverse filament leads to get them. As I have no outside Aerial - I have to use inside 30 ft. one."

MRL #2 BEATS 2-TRANSISTOR RIG.

Ill., Anna, R.D., P.E. Monitor WPE9HFY: "Must say I am so very proud of my #2. It sounds better than my 2-transistor set. Locals good - and 40 mi. in daytime. At night, you should hear them roll in around midnite. Dallas (550); New Orleans (500); Atlanta (450) Chicago (350); WCKY (330); WAVE (200); WSM (100) and many other stations. Am on a hill with an Aerial 100 ft. long and 30 ft. high. Use 1N34 Diode to bring them in louder. I've heard of DX Xtal sets in the old days, but had to hear it to believe it. You may print this."

STEEL GALENA BRINGS THEM IN.

S.D., Dell Rapids, P.V.: "Used one of your Xtals. Sure does bring them in. Receive 4 stations 24 mi. away with wonderful volume. Have gotten Shortwave stations many times."

MRL HB-1 HELPS A LOT.

Kans., Wayside, R.A.: "Your #1 Headphone HB clears up a lot of problems on phones."

LIKES DP-4 1-TUBE DETAIL PRINT.

Mich., Franklin Mine, P.J.K.: "RB-30 received - best yet. Also like DP-4 as I have them all on one sheet - no need to go rummaging thru a lot of magazines to find 1-tube circuits."

VARIETY OF STATIONS ON MRL #2-A

W.Va., Washington, D.M.: "Used Ant. 50 ft. long and 20 ft. high and Trimm Featherweights, and I got lots of stations. Here are a few of them. Spanish (possibly Del Rio) (1450); New Orleans (625); KMOX (550); Boston (500); WSM (450); WENR, WBBM (400); WJZ, WOR (350); WRVA (250); KYW (250) and 2 boats on Ohio river, the "Robert Weir" and "Indiana." The Ant. points SSW. Thanks for a FB crystal set."

TRX AMPLIFIER #16, 50-in-1 TUNER and MRL I-TUBER (HB-4) TOGETHER.

Canada, N.S., Lunenburg, R.T.: "Had all these hooked up and the DX rolls in. Listened to Germany (3600) last nite. Use a 75 foot Zeppelin Ant. 30 ft. high. I get good results with these Aerials. It points West & East. Weather here isn't too good for DX. It's good during the winter, tho."

MRL QRM KNOCKS VANCOUVER STATION

Canada, B.C., Vanc'r., R.A.: "Am very pleased with your QRM Coil. Practically deadens my bad station, without reducing signal strength of the others. Quality of your stuff is excellent. You may print this."

MRL 50-in-1 TUNER ON MRL #2 SET.

Ill., Peoria, B.M.: "I made Ur 50-in-1 tuner (DP-61) and it is perfect- couldn't be any better. I use it on my #2 set. I get the signals louder and I get Shortwave in the daytime loud. I am putting up a better Ant. system for better DX stations."

MRL I-TUBER (DP-29) DOES IT.

Calif., Baldwin Park, R.R.M.: "Built most all the plans you sent me and can report good results on most of them. I got Oklahoma City (1600) on DP-29, 1-tuber. Also lots of Police and good on Broadcast band."

MRL #2 CRYSTAL BEATS THEM ALL.

N.Y., Armonk, R.W.: "A few mo. back I bought one of your #2 Xtl kits - much thru curiosity. You see, I have made hundreds of them in my day, but must admit the #2 beats anything I ever made. It's all its advertised to be, considering I haven't the proper Ant., and live on a 50 ft. lot."

HUNDREDS more on file. *We'd like yours. Reports given in the spirit of comparing results.*

Antenna Wire, Insulators, Accessories

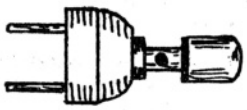
NEW MRL ANTENNA KIT.

By making these kits ourselves we can give you a better deal. No expensive box or advertising.

All parts needed for an ordinary Aerial; no need to shop around. Includes 50' tinned and stranded Ant. wire; 25' stranded rubber-cov. leadin; 2 glass Lo-loss insulators; 2 por. split knobs; 1 ground strap and screw, MRL DP-30 with directions and lots of Aerial kinks.
1-38. Ant. kit. 1½ lbs. wt. 1.00

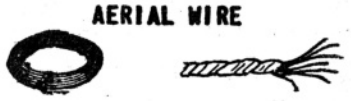
"PROPER ANTENNA and GROUND CONSTRUCTION." DP-30. - - - .10

ANTENNA ELIMINATOR.



Safe to use on any 110 v. line and is plugged in whichever way it works best - to get the "hot" side for Aerial. Binding post is fitted for your Ant. set lead. A ground may be used on set but it usually works as well without.
Ant. Eliminator. 1-20. 3 oz. .60

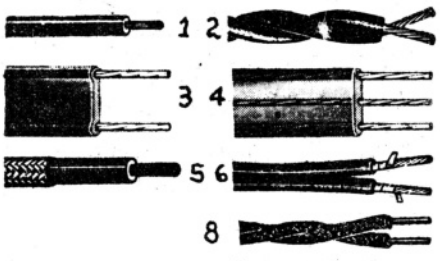
AERIAL WIRE



High conductivity copper wire. Enamel protects wire from weather corrosion. Stranded is light, but still gives more surface for pickup than solid. Solid is best for SW; stranded for the average Antenna. Sold in 100' lengths only. Add postage to cost.

#12 Solid Enamel. 1-2. 2 lb. 1.75
#14 " " . 1-3. 1½" 1.25
7/26 Str. Tinned. 1-6. 1 lb. 1.00

LEADIN & TRANSMISSION WIRE.



(1) #20 Single cond. Leadin. Flexible; stranded; rubber cov.; weatherproof; easy to solder. OK for connecting sets. batt. leads and other uses. **1-11. Foot. .01**

(2) #18 2-cond. Leadin. Larger wire and heavier insulation than above. Twisted. For noise-reducing doublets, connecting alarms, bells, etc- **11-12. Foot .03**

(3) 2-cond. TV Leadin. Parallel, stranded. 300 ohm line. 50-500 megs. #22 of 7 strands #30. Very flexible. **1-40. Foot .03**

(4) 3-cond. TV Leadin. Parallel, stranded. #20 of 7 strands #28. Same operation as 2-cond. Third cond. may be used for a ground, etc. **1-41. Foot .05**

(5) #14 Solid RC. Highly weatherproofed. OK for 110 v. lights, bench wiring, etc. **11-2. Ft. .03**
(5) #16 same. 11-1. Foot .02

(6) #18 Rip Cord. POSJ, Handy cord centerstrip. Flexible rubber. Parallel - and rips apart for connecting. Stranded. Solders very easily. **CAT. 11-5. Foot. .03**

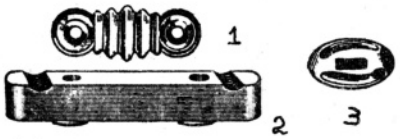
(8) #20 Twisted Lamp Cord. Has cotton serve then rubber insulation and cotton braid. 2-cond. are stranded. **11-3. Foot .03**

LOOPS and LOOP WIRE.

Wound on rigid fibre form with lug terminals. Replaces present loops, and turns may be removed for balancing. For RF stage this loop replaces first coil. Size 6" x 10". **1-42. 4 oz. wt. .50**
6" x 12"

LOOP Wire. Also called Antenna cord. May be used for loops, inside Aerials, rotor pigtails and many other uses. Has cotton braid that slips back. Approx. 19 tiny strands that solder easily. Very flexible. **1-14. Per foot .01**

AERIAL INSULATORS.



(1) Glass Strain Insulator. Of clear lo-loss crystal glass with hi-dielectric. Better than porcelain. Smooth surface prevents collection of ice and dust. 3" in length. **1-21. 2 oz. each .08**

(2) Porcelain Cleats. Suitable for strain insulators, or wiring houses. 3" long. **1-29. 1 pc. .02**

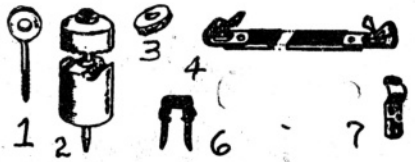
(3) Aero. Guy Insulators. The wires overlap in case insulator breaks your mast won't fall. Of polished porcelain to shed moisture. 1¾" long. **1-23. 2 oz. .08**

LEADIN INSULATORS & PARTS.

(1) 7" Screw In Insulator. Eye wall or screw eye. Holds leadin away from wall or trees. Bakelite insulator. **1-26. 7" 4 oz. .07**

(1) Same 3" long. 1-25. .06

(2) Split, or Nail-it Knob. A handy knob for leadin or wiring



houses. Sturdy. **1-24. 3 oz. .05**

(3) Leatherheads. For split knobs, or other uses. Saves your porcelain. **11-18. 25 for .10**

(4) Window Leadin Strip. Fits under window so it may close. Is plastic coated; Fahnstock clips each end. Best to solder on the wires. **1-12. 2 oz. wt. .15**

(6) Saddleback Staples. Insulates wire from staple. Use on inside wires. Easier installation. **1-35. 15 for 5¢; 100 .25**

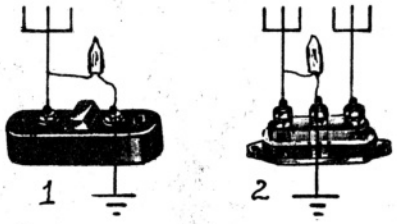
(7) Push Clips. Fasten wire to baseboard, or picture moulding without nails. **1-36. Dozen .05**

GROUND CLAMPS & STRAPS.

(1) "C" Ground Clamp. Positive contact with screw point. Rustproof. Opens 1¼". **1-17. 3 oz..20**

(2) Ground Strap. Zinc clamp that takes a larger pipe; opens 2" dia. Fahnstock clip should be soldered to leadin to keep down corrosion. **1-18. 2 oz. .08**

LIGHTNING ARRESTERS.



(1) General purpose. Uses gap principle. Underwriter's approved. Protects house and set. With 2 mounting screws. Use heavy wire to ground, or several twisted together. **1-34. 4 oz. .30**

(2) Doublet or TV. This protects house and TV set. Also uses gap principle. Screws furnished. **1-43. 7 oz. wt. .40**

Neon Lamp. NE-2, 1/25th watt. Connect across arresters, as above, and watch static flashes. Will not affect arrester or set. Other uses. **20-18. 2 oz. .15**

Radio Hardware Fuses and Mountings

Most all screws and nuts furnished in steel, as it is not necessary to use higher priced brass in Radio work. All plated when possible to obtain it.

(1) ROUND HEAD MACHINE SCREWS.

Thread	Length	CAT.#	Doz.
2-56	x 1/2"	13-62.	.07
"	x 3/4"	13-65.	.09
3-48			
"	x 1/2"	13-87.	.08
"	x 7/8"	13-88.	.09
4-40	x 3/8"	13-30.	.09
"	x 1/2"	13-58.	.09
"	x 1"	13-68.	.11
"	x 1-1/2"	13-69.	.17
4-36	x 1/2"	13-104.	.10
"	x 1"	13-115.	.12
5-40	x 1/4"	13-70.	.08
"	x 1/2"	13-73.	.09
"	x 1"	13-74.	.11
"	x 1-1/2"	13-76.	.15
6-40	x 1/2"	13-145.	.10
"	x 3/4"	13-146.	.12
"	x 1"	13-159.	.14
6-32	x 1/4"	13-14.	.10
"	x 5/16"	13-15.	.10
"	x 3/8"	13-16.	.10
"	x 1/2"	13-17.	.10
"	x 5/8"	13-18.	.10
"	x 3/4"	13/19.	.10
"	x 1"	13-20.	.11
"	x 1-1/4"	13-21.	.12
"	x 2"	13-23.	.20
8-32			
"			.15
"			
"	x 1"	13-27.	.17
"	x 2"	13-28.	.20
10-32	x 3/8"	13-64.	.10
"	x 1-1/2"	13-63.	.15

(2) FLAT HEAD MACHINE SCREWS.

3-48	x 1/4"	13-186	.09
2-56	x 3/8"	13-94.	.09
4-40	x 3/8"	13-12.	.09
"	x 7/16"	13-31.	.09
"	x 3/4"	13-32.	.10
"	x 1"	13-45.	.10
"	x 1-1/2"	13-46.	.15
4-36	x 1/2"	13-133.	.10
"	x 1"	13-134.	.12
6-32	x 1/4"	13-33.	.08
"	x 5/16"	13-34.	.08
"	x 3/8"	13-35.	.08
"	x 1/2"	13-36.	.08
"	x 3/4"	13-37.	.09
"	x 1"	13-38.	.11
"	x 1-1/2"	13-40.	.17
"	x 2"	13-41.	.20
8-32	x 1/4"	13-42.	.09
"	x 1/2"	13-43.	.13
"	x 3/4"	13-44.	.15

(3) BINDING HEAD MACHINE SCREWS.

2-56	x 3/8	13-91	.10
4-40	x 3/4"	13-47.	.10
4-36	x 1/4"	13-93.	.10
6-32	x 1/4"	13-48.	.10
"	x 3/8"	13-95.	.11
"	x 7/16"	13-51.	.12
"	x 3/4"	13-50.	.13
"	x 1"	13-52.	.14
"	x 1-1/4"	13-49.	.15
8-32	x 1/4"	13-53.	.10

(4) OVAL HEAD MACHINE SCREWS.

6-32	x 1/2"	13-55.	.08
"	x 1"	13-56.	.10

(5) FILLISTER HEAD MACH. SCREWS.

8-32	x 2"	13-60.	.20

(6) SELF-TAPPING SHEET METAL SC.

6-32	x 1/4" Flat	13-66.	.10
"	x 1/4" Acorn	13-67.	.10

(7) SET SCREWS.

10-32	x 5/16"	13-71.	.10
12-28	x 7/16"	13-72.	.10

(8) WOOD SCREWS.

#2	x 1/2" Round	13-75.	.10
#3	x 3/8" "	13-78.	.10
#3	x 1/2" "	13-79.	.10
#2	x 1/2" Flat	13-80.	.10
#6	x 1/2" "	13-84.	.12
#6	x 1" "	13-85.	.15
#10	x 1½" "	13-89.	.12

(1) HEXAGON NUTS.

2-56	x 3/16"	13-1.	.12
4-40	x "	13-2.	.11
4-36	x "	13-83.	.11
5-40	x "	13-77.	.11
6-32	x "	13-3.	.10
"	x 5/16"	13-4.	.11
8-32	x "	13-5.	.11
10-32	x "	13-61.	.12
"	x 3/8"	13-6.	.13

#32 x " vol. control, **see R-1**
" x 7/16" sw. nuts, **see E-4.**
#6 & #8 Knurled nuts, **see F-4.**

(2) FIBRE WASHERS.

Hole size	CAT.#	Doz.
#4	13-105.	.05
#6	13-106.	.06
#8	13-107.	.07
#10	13-108.	.08
1/4"	13-109.	.09
5/16"	13-113.	.10
3/8" Shoulder wash	13-114.	.12

For more, see Fibre spacers.
1/4" Hole Shoulder 13-128. Doz. .11

(2) METAL WASHERS.

#2	13-96.	20 for	.05
#4	13-97.	"	.06
#6	13-98.	"	.07
#8	13-99.	"	.08
#10	13-100.	"	.10
1/4"	13-101.	"	.11
7/16"	13-103.	"	.12
Tiny model	13-102.	"	.05

(3) INSULATED SPACERS: BUSHINGS.

Hole	Wide	High	CAT.#	Doz.
#6	1/4	3/16	13-135.	.10
#6	1/4	1/4	13-137.	.20
3/8"	.5/8	.3/16	13-143.	.10

(3) METAL SPACERS or BUSHINGS.

#4	1/4	1/4	13-147.	.10
#6	5/32	1/4	13-158.	.15
#8	1/4	3/16	13-152.	.10
8-32	.5-16	.3/8	13-155.	.10
3/16	1/4	1-1/16	13-157.	.25
3/8	9/16	3/16	13-156.	.30

(4) RUBBER GROMMETS.

1/4"	Panel hole	13-129.	.15
3/8	" "	13-130.	.20
1/2	" "	13-131.	.25

(5) LOCKWASHERS.

Teeth type; internal or external:

#2	13-127.	20 for	.08
#4	13-122.	"	.06
#6	13-123.	"	.06
#8	13-124.	"	.07
#10	13-125.	"	.08
1/4"	13-126.	"	.10

Split spring lockwashers:

#2	13-116.	20 for	.05
#4	13-117.	"	.05
#6	13-118.	"	.05
#8	13-119.	"	.05
#10	13-120.	"	.06
1/4"	13-121.	"	.10

(6) EYELETS. Rivets with holes.

Hole	Length	CAT.No.	Doz.
1/16"	1/8"	13-161.	.06
1/8	3/16	13-163.	.10
1/8	1/4	13-165.	.10

(7) EYELET LUGS. Rivet & lug.

Hole panel	Panel thick.	Length lug.	CAT.No.	Doz.
5/32"	.1/8"	.3/4"	13-167-B.	.12
1/8	.1/16	.3/8	13-167-C.	.07
5/32	.3/32	.3/8	13-167-D.	.07
3/16	.1/8	.5/8	13-167-E.	.12
7/32	.1/8	.1/8	13-167-F.	.10
1/8	.1/16	.3/4	13-167-G.	.05

See **page E-3** for more data.

(8) BRACKETS. Used in kits, etc.

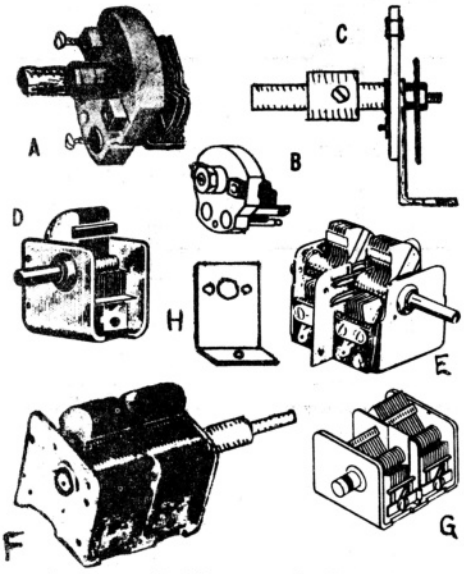
Wide	Base	Upright	CAT #	Each
1/2"	.1/2"	.1/2"	13-178.	.03
1/2	.1/2	.1"	13-179.	.04
3/8	.1/2	.1-1/2	13-180.	.04
1/2	.1	.1	13-181.	.05
3/4	.1	.1-1/2	13-182.	.05
3/4	.1	.2	13-183.	.06
3/4	.1-1/2	.1-1/2	13-184.	.06

SEE J-R-FLYER, ETC.

(1) Min. Radio or Auto Fuse. In sizes: 1- Amp. **2-1. Each .04**
(2) Fuse Clip for Above. Also for cart. leaks. **25-34. Each .02**
Larger, for motor and house cartridge fuses. **11-25. Each..02**
(3) Cartridge Fuses. Sizes: 3-30 Amp. fit above. **11-24. .05**
(4) Fuse Wire. Replaces fuses. Sizes ½, ¾ 1, 2, 3 A. Specify size wanted. **11-26. Foot... .05**

Capacitors (Condensers) — Accessories — Color Codes

VARIABLE TUNING CONDENSERS



Our variable condensers are the best obtainable at the price and for general use. As many are hard to get, they may vary some in size and shape, but will make every effort to supply ones in cuts. 1/4" shafts, except (B).

(A) 2 or 3 plate midget; 15 mmfd. for band/spread or Antenna condenser. **8-1. 4 oz..... 1.00**

(B) Same, except screwdriver slot adjustment. **8-85. 2 oz. .60**

(H) Bracket for APC condensers (B & C). 1" wide x 5/8" x 2" up, with 4 mounting holes. **13-177..25**

(C) MRL 2 plate Ant. cond. as used in 1-tuber (HB-4) and other similar rigs. Includes bracket & insulated extender. Bracket used as plate, with easy connection thru base. **CAT.8-118. 6 oz. 1.50**

(A) 53 plates; .00021 midget. Scarce. Used in Xtal sets, or on BC band. **8-101. 6oz. wt. 1.50**

(D) .00035 single gang. We call them .00035 but they are really 15-409 mmfd. (.000409) and even better than .00035 as you have a wider range. Used in most Xtal & HB-4 sets. Semi-midget type. We furnish screws. **8-7. 6 oz. 1.25**

(E) .00035, 2-gang. TRF and 2-A & 10 sets. **8-10. 1 lb. 1.75**

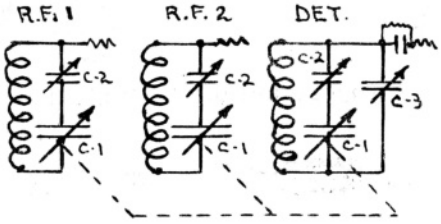
(F) .00035 2-gang at special price. New. 0-100. OK for base mounting. 2 x 1½ x 2¼ deep. 3/8" shaft for 1" - then 3/8" shaft. **8-86. 2-gang special. 10 oz. .98**

(G) 2-gang Superhet type, with 1 gang smaller for oscillator. Semi-midget. **8-112. 1½#... 1.50**

(D) .00014 mfd. Variable condenser. Same as .00035 but with less plates. Works OK on 1-tuber without trimmer cond. Base mtg. with screws. **8-4. 6 oz..... 1.25**

.00014 MFD. MIDGET CONDENSERS.

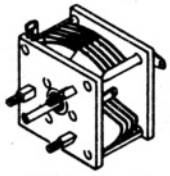
Because 140 mmfd. SW condensers may be scarce, we have out-



lined our efficient method of tuning without them. For the 1-2 3 gang 140's we use .00035 Var. cond. **(C-1)** in series with 25-280 trimmers **(CAT.8-117) (C-2).**

Adjust the trimmers on the BC band, as the RF stages tune much sharper here. A signal generator is best, but not required. The whole condenser range may be shifted to suit. Use an insulated screwdriver for best results.

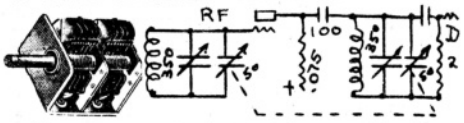
As the detector tunes sharper, we place a 2-3 plate midget **(CAT 8-1) (C-3)** across this stage only, as a bandspreader. If you can separate the plates ¼" it is much better. A bar knob and scale may be used on the panel.



BUTTERFLY VARIABLE CONDENSER.

For many applications, such as wobbulators, HF units for fine tuning, etc. Makes an excellent band/spreader. Rotor floats on ball bearings. Ceramic insulation. Cap. 50 mmfd. Approx. 1-5/8 sq. x 1¼" deep. **8-121. 6 oz. 1.25**

2-GANG 50 MMFD. DOUBLE SPACED.

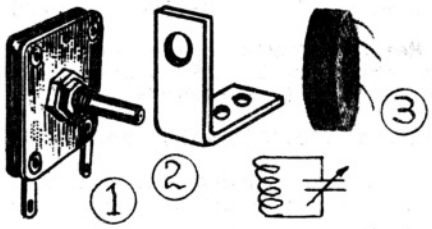


About same size as our standard 2-gang .00035. 2¼" x 1½" hi. x 2¼" deep. Has 6 rotor and 5 stator plates in each gang. May also be used as 2-gang trimmer, or tuner for SW bands. May be hooked in series for bandspread condenser. **8-8. 8 oz..... 1.50**

CONDENSER SHAFT PARTS.

(H) Bearings. 1/4" hole for a standard shaft. Bushing, with a locknut, fit 3/8" hole thru your panel. **8-104. 2 oz..... .25**

MIDGET TUNING CIRCUIT.



For builder of miniature and Transistorized sets. Well made.

(1) **.0004 mfd. Variable Condenser.** 1½" square. 1-hole mtg. ¼" x 3/4" shaft. Extends only ½" behind panel. 180 deg. rotation. 10-400 mmfd. Interleaves between plates prevent shorts. **8-124. Midget Cond. 4 oz.... 1.00**

(2) **Bracket** for midget cond. 1¼" high x 1-1/8" deep. 5-16" hole may be reamed to take vol. controls, etc. Cad. plated steel bracket. Many other uses. **8-125. Midget Cond. bracket... 15**

(3) **Midget BC Coil.** Only 11/16" in dia. 550-1600 Kc. to match cond. Litz wire. May be mounted on condenser itself. **7-183. Midget BC Coil. 2 oz .40**

TRIMMER VARIABLE CONDENSERS.

Postage stamp, slot adjustment compression type. All new. Low-loss. Can mount inside coils.

Capacity	Use	CAT	Ea.
3-15 mmfd.	Standard.	8-15.	.10
3-15 2-gang, 2 circuit.		8-84.	.15
25-280	In series with .00035 gives .00014 (SW)	8-117.	.25
100-500 mmfd.	Mostly for adding to long wave coils.	8-96.	.30

Shaft parts continued.

(I) Couplings. For ¼" shafts. Brass. **CAT.8-119. 2 oz..... .20**
Insulated. **8-120. " ..... .20**

(J) Extenders. Insulated type, as on 1-tube Ant. cond. Couples to ¼" shaft. **CAT.8-99. 1 oz. .20**

(J) Reducer. Brass. From 3/8" shaft to ¼" shaft. **8-116. .20**

Shafts. Cut any length.
3/16" Wood. **8-105. 6" long.. .04**
1/4" " **8-103. Per inch .01**
1/4" Brass. **8-111. " " .02**

5/16" dia. BRASS RODS.
May be useful around the Shop. Can also furnish them threaded #18 per inch. Same price plain or threaded. **8-122. Per inch..03**

Continued on next page.

Capacitors, continued

Tubing. Goes over ¼" shaft. Brass, ¼ x 3/8." 8-115. inch .03
Fibre. " 8-110. " .03

Metal spacers to keep cond. away from panel. 3/8" hole x 7/32 thick. **8-102. 2 spacers.... .05**

MICA or CERAMIC FIXED CONDENSERS

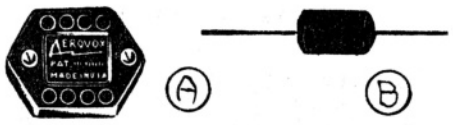
We always furnish best grade & smallest size obtainable. The

odd sizes are capacity tested on our sensitive meter and marked. Refer to Color code chart for standard sizes.

Mfd.	mmfd.	CAT.#	MRL
.00001	10	8-126.	.15
.000025	25	8-16.	.15
.00005	50	8-17.	.15
.0001	100	8-18.	.15
.00012	120	8-26.	.15
.00025	250	8-19.	.15
.00042	420	8-106.	.15
.0005	500	8-20.	.15
.00056	560	8-28.	.15
.00062	620	8-29.	.15
.001	1000	8-21.	.20
.0015	1500	8-87.	.20
.002	2000	8-22.	.20
.004	4000	8-95.	.25
.005	5000	8-23.	.25
.006	6000	8-24.	.25
.0068	6800	8-14.	.25
.007	7000	8-93.	.25
.008	8000	8-90.	.25
.009	9000	8-88.	.25
.01	10,000	8-25.	.25
.015	15,000	8-13.	.25
.05	50,000	8-98.	.25

NEW CERAMIC CONDENSERS in STOCK
In mmfd. 3.3 - 68 - 220 - 330 - 470 - 750 at 15¢ each.
Some double .001 at 25¢ each.

SPECIAL BUY ON NEW CONDENSERS.

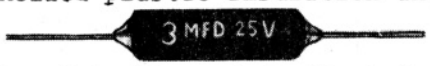


(A) shows heaviest duty for Xmtr and other Hi-voltage uses. 5000 v. test; 2500 w.v. In brown molded low-loss Bakelite. Standard brands as Sangamo, Sprague, Aerovox, C-D, etc. Have screw terminals. Drawing is less than half size. Sizes: .0001, .00015, .0002, .0003, .00051, .00075, .001 .0015, .002, .0024, .0036, .01. Above at 50 to 80% off Amateur net. **8-107. Any size & post. .25**

(B) is CRL NPO (neg-pos-zero) temp. compensating capacitors. OK for coupling HF, etc. for the limiting of freq. drift. In 3 mmfd. (.000003 mfd.) only. Regular 29¢ Ham net. **8-108. Each .15**

MIDGET BYPASS CONDENSERS.

Drawing is slightly enlarged. Molded plastic insulation and



hermitically sealed. Ideal for Transistor and other miniature sets. Furnished in sizes.

1 mfd.	x 25 v.	Midget	8-127.	.20
3 "	"	"	8-128.	.25
6 "	"	"	8-129.	.30
10 "	"	"	8-130.	.35
30 "	"	"	8-30.	.40

TUBULAR BYPASS CONDENSERS.

Dry type. Standard brands.

Cap.	Working V.	CAT.	wt.	Ea.
.01	600.....	8-40	"	.10
.01	1000.....	8-82.	"	.15
.02	600.....	8-41.	"	.11
.02	2000.....	8-55.	"	.15
.05	600.....	8-43.	"	.12
.05	1000.....	8-83.	"	.20
.1	600.....	8-44.	"	.15
.1	1000.....	8-100.	"	.20
.25	600.....	8-45.	3 oz.	.20

.5 x 600 v. sold out. Substitute .25 x 600 (8-45) same use Okeh.

LOW VOLTAGE ELECTROLYTICS.

For Transistor circuits and for cathode bypasses. Best grade and smallest sizes obtainable.

5x5	35.....	8-31	2 oz.	.25
10x10	35.....	8-33.	"	.30
10x10	50.....	8-37.	"	.32
25	50.....	8-38.	"	.35
50	25.....	8-39.	"	.40
100	25.....	8-35.	"	.40

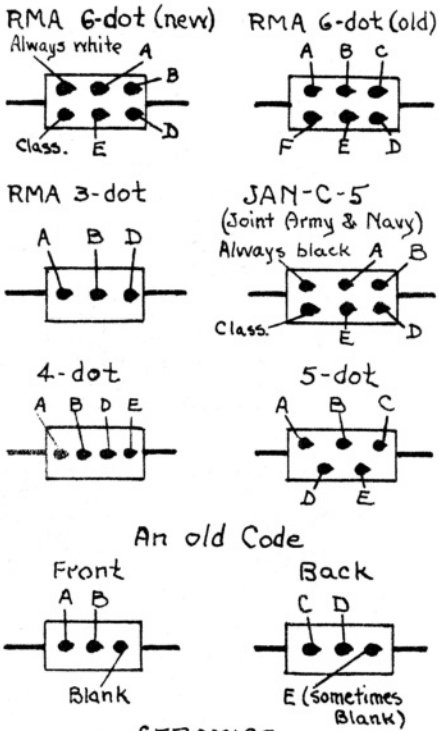
POWER SUPPLY FILTER CONDENSERS.

Cap.	Tubular W. V.	CAT.	Spade Wt.	MRL
20	150	8-60.	2 oz.	.35
20x20	"	8-61.	4 "	.50
50	"	8-62.	3 "	.45
100	"	8-64.	4 "	.65
2	450	8-66.	3 "	.37
2 spade	"	8-76.	2 "	.30
4	"	8-68.	2 "	.35
6 spade	"	8-79.	4 "	.40
8	"	8-71.	4 "	.55
8 spade	"	8-80.	4 "	.55
10	"	8-73.	4 "	.60
30 spade	"	8-32.	6 "	1.00

Good grades at low prices. For Experimental or replacement purposes. Hermetically sealed. The spade types may be mounted on base or under base. Also called twist-prong electrolytics.

WATCH THE MRL FLYER...
for announcements of new capacitors. Due to the ever-changing market - many changes occur. As far as possible - MRL tries to supply the correct capacity as ordered - to please you.

CONDENSER COLOR CODES.



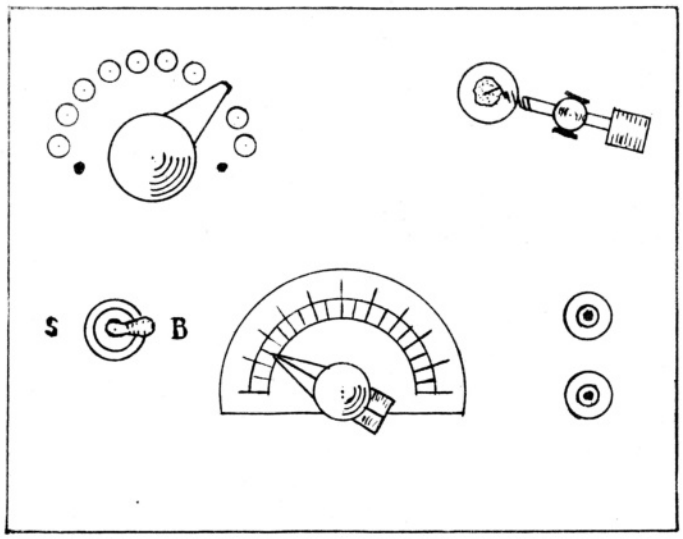
A B C 1st sig. figures		D No. of zeros	E Tol. %	F DC. W-V
Black	0	←	20	——
Brown	1	0	1	100
Red	2	00	2	200
Orange	3	000	3	300
Yellow	4	0,000	4	400
Green	5	00,000	5	500
Blue	6	000,000	6	600
Violet	7	0,000,000	7	700
Grey	8	00,000,000	8	800
White	9	000,000,000	9	900
Gold	–	.1	5	1000
Silver	–	.01	10	2000
None	–	–	20	500

It is not necessary to learn the color codes. Just keep them for reference. Many changes have been made over the past years. Early Radio parts were not coded - and some of the mfrs. now do not code them. If you don't have a cond. tester, or bridge, you R out of luck. Some companies even use their own codes.

Classifications in the series are not necessary to define.

When reading a condenser hold arrows to right - like you read a book. If the A sign is brown, you have a (1). If 2nd color is green it is (5). If 3rd color is red it is (2). If 4th color is orange you have 3 zeros after 152 or 152,000 mmfd. or .152 mfd.

If you find wax on Mica cond. it is required by the Armed forces when shipping to tropical climates. It may be washed off with lacquer thinner if desired.



Drawn one/half size

MRL NO. 2-A

LONG DISTANCE

Crystal Set Kit.

Single Dial Control

$4.50

Plus 2 lbs. p.p.

Since 1933, we have continually improved our original #2 Xtal circuit. Today, we feel this is the most efficient Crystal set you can buy, or build.

#2 and #2-A sets have received stations over 6000 miles distant - under good conditions. You may not do as well - or maybe better - a lot depends on your location and conditions. Reports of SW BC reception over long periods of time. and DX Amateurs that would not be re-broadcasted, has proven reception is direct.

Some customers have bought as many as 6 of these kits, at various times, proving they are OK. Due to lack of space, we cannot list our 6" stack of testimonials. (See HB-2 for 4 condensed pages of our best records). Selling a kit year after year -with fine reports, is good enough for us. When near strong stations, a horn speaker may be used.

This single-dial #2-A is our latest. Some like it - others prefer the #2. We get good reports from both of them.

All new parts are used. Whenever we can improve any kit, we do it at once. Coil is wound and tapped, and all parts ready to fit together. No need to start making them over to fit - like many other kits. The panel is drilled, countersunk, etc. All U need is a screwdriver, pliers, soldering iron and an evening of time. Very easy to assemble - in fact, lots of Grammar school boys build them all the time.

The panel is 5½" x 7" (drawing 1/2 size) - of Compo., neatly arranged. Switch points are riveted in, when you get the kit. Just tin the back of them; solder fine, flexible wires on back of points, and run wires to the coil. The switch-points give you a variation in your tuning - for different bands. The high-freq. is toward the left.

Selectivity. The #2 and #2-A are noted for selectivity. The **SEL-BRD** switch - on left, gives your choice. The **BRoaD** side is like our original #2 circuit. It is used in the Country, away from loud stations, where most DX is obtained. **SEL**ective side is fully 200% sharper than **BRD** side. This is for City use, next to powerful stations. It is often possible to sneak between two powerful stations and get DX on the **SEL** side. Removing the lead to the ground often helps if too close to a station with a strong ground wave. Use 50' of Aerial for City; 100-150' for Country - both Aerials high as possible.

Kit includes an MRL Steel galena Crystal. Any Xtal may be used, if desired. An MRL Carborundum **(CAT. 9-34)** may be used, if 3 vo. of battery is used in series, for real, good volume. The phones plug into tip jacks at the right.

The heart of the DX properties is the coil **(CAT. 7-101)**, wound on MRL 2XM Celluloid form **(CAT. 7-40)**. The proper size of the winding wire, tap arrangemant, placing of the coil with short leads - all make a big difference in operation. All parts are arranged for shortest leads, with efficient operation. Coil may tune down to 20 meters, in fact, most of our DX records have been made on some hi-frequency band.

Large and small hookup wire is furnished. The small **must** be used for flexible leads to the coil and A and G leads - nothing else! The heavy wire is used for the balance of the set. We found larger wire works much better in HF circuits for DX in Xtal sets. Directions are given in DP-22-A, (7¢) furnished free with kit.

This set may be used alongside the bed, when others are asleep. Or, on a camping trip, by throwing 100 ft. of Leadin wire **(CAT. 1-11)** over a limb, and driving a pipe into wet ground. No batts. to lug around. Amateurs use them for Monitors. Hooking a #2 ahead of a BC set will both improve selectivity and volume of the BC set. Also used where there is no current, or batteries. Have one around when your big set stops.

Advertisements are going around about Pocket Radios, with "no crystals to adjust; working speaker; and illuminated dials." They use a fixed Crystal; an ear phone in the case for a speaker; and a flashlight battery for the dial lamp. Buy a #2 or #2-A and get a set that's big enough to work correctly.

There is no better, surer way to learn Radio than starting with a Crystal set. We invite a comparison with other kits on the market for price, selectivity and operation.

Our prices for #2 and #2-A Kits do not include Aerial, cabinet or phones. See our Catalog for prices on Aerial supplies and phones. Use the best kind of phones you can afford, in order to hear more weak signals.

CAT. 14-1. MRL #2-A Crystal Set Kit, only. Ship. wt. 2 lbs. **$4.50**

CAT. 14-1-W. MRL #2-A Crystal Set Kit, wired and tested. Shipping weight 3 lbs. extra..... **$6.50**

MRL No. 2 Long Distance Crystal Set. $5.00

The #2 is more like our original. Same size panel, etc. except 2 var. condensers. Many prefer the 2nd cond. for finer tuning of A-G. Directions that apply to the #2-A also apply to #2. DP-22 (7¢) is furnished with Kit.

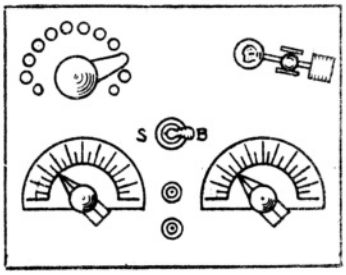
Difference in price is due to cost of 2 single cond. against a 2-gang for 2-A.

CAT. 14-2. MRL #2 Xtal Kit. 2 lbs. **$5.00**

CAT. 14-2-W. Same, wired. 3 lbs. **$7.00**

NOTE: Order **HB-2** extra. Gives all details for both sets. (See page A).

Modern Radio Laboratories.



Drawn 1/4 size

MRL #2 & 2-A Crystal Set Notes. #2 Kit, DP-22. #2-A Kit, DP-22-A. MRL Handbook #2.

We have so many hundreds of letters on these two sets that it is impossible to list them all. Following are some of the reports, selected at random, and some notes the Fans have mailed in. Present owners of #2 and 2-A sets may improve their reception if they read these notes.

MRL #2 SET BEST IN 23 YEARS OF EXPERIMENTING.

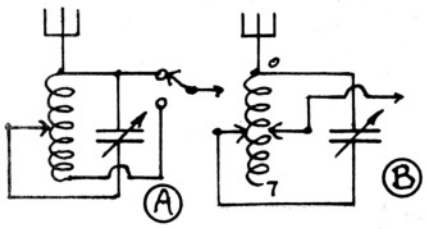
Mr. M. D. Maraulja, Florida, sez "Received #2 kit in good shape & wired it up the same evening. I will say that I have been buying and building Xtal sets off and on for some 23 years and none of them could come anywhere near this #2 in DX, volume and selectivity. The SEL-BRD switch is fascinating - it's so effective. It will separate out and boost the volume on some DX stations, too. In 4 nites of listening I got the following: Cincinnati (800); Nashville (650); Charlotte (550); New Orleans (500); Atlanta (450); and many Floridan. It is equal to a 1-tuber I built altho not for volume on locals. I use the phone finger stops for an Aerial and sink for ground. I tried stringing up outside Ant. but got better results on the phone Aerial.

"I can plug in the phones and leave a 3 ft. Ant. lead hanging from the set, and no ground. If I walk past the phone the locals blast in. Ground boosts the volume on DX stations.

"Adding a 2-stage Transistor amplifier to my #2 increased my DX to Lincoln (1225); Milwaukee (1150); Cleveland (1000); Ft. Wayne (950); Rushville (900); Baton Rouge (550); Birmingham (500); etc. Am going to build a #2 and Transistor amplifier into a cabinet."

Editor: Mr. M. is lucky to be hooked to a good phone Aerial as it beats the outside. It is normally the reverse. This all results from experimenting and nobody can tell what you'll find in your location. If he was trying for SW, then he'd have to use an outside Ant. for HF.

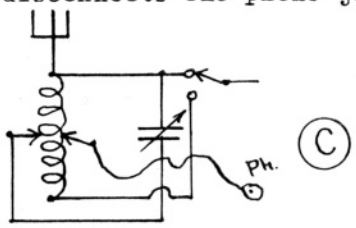
MORE TAPS ON #2 and 2-A COILS.



Our friend, Wesley Lingley, advises that he adds several taps to the coil for the #2. U may run taps every 15 turns - making 7 in all, including zero point. This substitutes for the SEL-BRD switch and 5 more pts. may be added to it. (A) shows method now used while (B) is his method. He says it is very helpful when using Diodes as they are not as selective as Steel galena, Iron pyrites, Silicon and Carborundum. It may also help in working some DX stations where more selectivity is needed.

ANOTHER SELECTIVITY CONTROL.

Our friend of many years, Vernon Lee Chappell, Okla., has a simpler plan (C) for regulating selectivity, to balance the impedance of any crystal or Diode. He disconnects one phone jack



from the variable cond. frame & uses a clip onto the coil. If U want a permanent connection hook your lead onto a pin and insert it thru the DCC. Solder down as soon as best position is found.

It is a good idea to use some switch points and lever as the setting will be different when using the SEL-BRD switch.

GOOD FOREIGN DX ON MRL #2.

For over 10 years Clyde Pauley, West Va., has been doing business with MRL - and sending in good reports. Here is what he says: "I am still using my MRL #2. Best DX is Leopoldville, Africa (7200); TAS, Ankara, Turkey (5900); Moscow (5000); Berne (4400); Berlin (4400); Paris (4000); London (3800); Cuba (1100) and all over the U.S.A. That's a long distance from my mountain home. I use your Steel galena and also 1N34 Xtal diode.

"My TV twin leadin is about 1000 ft. long to the top of a mountain. Sometimes I hook it to my Xtal set, and boy! you should hear it. Sounds like a 3-tuber."

Editor: Above distances measured on a globe, the only correct way, so they are accurate. He can really pull them in. That long Ant. really picks up the "electricity!" As an old Marine operator, I used to work 1000 miles with a fixed Perikon Xtal detector - when transmitters were far inferior to those nowadays. It only stands to reason, that with modern tube transmitters, and in a good location, a GOOD set will really bring them in.

W2YQT GETS GOOD DX ON #2.

Our old customer since 1947, George Mulfinger, W2YQT Recording studio, N.Y. state, writes about his #2 he built. It is built with 6 taps instead of 10.

"I am at a disadvantage due to several hi-powered locals nearby but here are some of the stations I got identified, but am sure the set has greater capabilities than these.

"Over a short period of logging I have received WJJD (600); WLW (525); WJR (360) and many 75 meter phones including W1EMF, W1KQQ, W200G, W3BMH, W3SSK, W8VDS with distances up to 360.

"I use it with a 12" speaker, and heard all over the room. On a Crystal set it seems the larger the speaker the more volume, even tho it doesn't have much driving power.

"From Sandy Pond, N.Y., using a steel clothesline for Ant. I got WLW (550); WWVA (400); WJR (360); WCAU (300); WHN (200) and VE2AG (200) on 75 m. phone."

Editor: We like to quote Amateurs as most of them are skeptical about DX on Xtal sets. He is running a 10 m. phone station and recording studio, so knows his stuff. We have an earlier report when he got London on an MRL 2-A. Selectivity problems can usually be overcome by using a shorter Ant. and possibly no ground. Depends on conditions.

9 DX STATIONS OVER 1000 MILES.

When 15 yrs. old, our friend B. W. Bergstrom, North Dakota, wrote about the 2-A kit he wired up: "I'm really tickled pink with your Xtal set. A week ago all I could get was locals. Then I hooked up my ground to a waterpipe and, I'm telling you, the all-nite stations just poured in. In 4 days (no sleep) I have logged 9 stations over 1000 mi. away. Every nite WJR (950) comes in like locals. I'm studying to be a Ham but Xtal sets hold a priority with me. I've used a P-set for 3 yrs. but it can't compare with the MRL 2-A. I get all my DX on a 1N34 Diode. Both our locals have strong gnd. waves."

MRL #2 HI-Q CELLULOID COIL TESTS and STEEL GALENA TESTS.

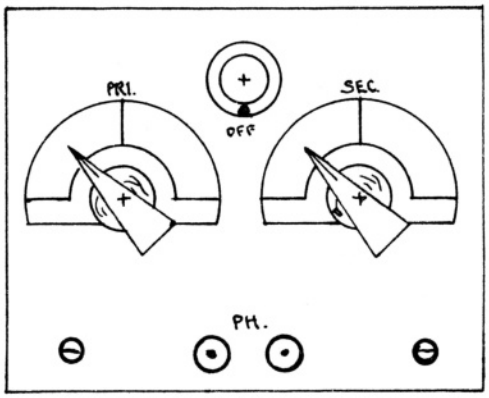
Bob Mickelson, Illinois, made a check on one of our MRL-made #2 Celluloid lo-loss coils. He used a General Radio Bridge Q Meter, which is about tops. At 600 kc. he got a Q reading of 215 - which is very good. At 1500 kc. the Q was so high it banged the meter off the scale. The distributed capacity of the coil is quite low - about 11 mmfd. He further gave the coil a coating of Krylon (pure acrylic) to moisture-proof it. When dry the Q was still the same.

You can now see why MRL Celluloid Coils are tops for DX - as most of our sets with good DX records are built with them.

He also tried about 70 minerals from all over the Globe, as he is a mineral collector. The Steel galena still gives a much better test than Germanium for DX performance on weak stations. We believe this is due to Diodes using such large catwhiskers.

MRL POPULAR RADIO KITS

MRL #18 Selective Diode-Transistor Set.



Without a doubt, this is one of the most selective Xtal sets we ever rigged up. By pulling out the Antenna coil and bringing up the TRX volume - you can pick up almost any local station without QRM from another. Around here (24 stations) we hooked stations we never heard on any Xtal set before. Good tone, too.

This is an old principle - but we haven't seen it used for many years. It does require an Aerial and ground, or good substitutes. We get locals when Ant. coil is pulled clear away from secondary coil. If in the far country, the Ant. and ground may be hooked to 1-2 on the secondary coil. Due to its construction, it should work well in the city or country with any size of Aerial.

Because the selectivity may be adjusted, you can slip in between many stations and pick out a weak one. Then, just up the volume and you bring it in good. We have been able to separate local stations and get one 100 miles away. However, in a good location at night, this set is really a wonder. DP shows how tone may be changed if desired.

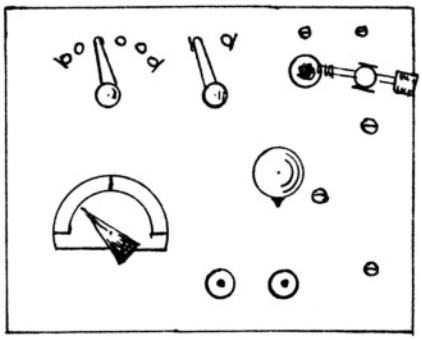
It is easy to assemble from DP furnished with kit. It mounts on a 4x5 panel and 4x4½ base. DP-18 shows how each wire is hooked, as well as other minor details. All parts furnished, down to the solder and wire. No drilling, or fitting is required.

A 4.3 v. Mercury battery is furnished, altho a 1½ v. pencell will work. They fit into a battery holder so renewal is easy. Battery drain is very low, so it becomes very economical.

This set should last for years and you'll be amazed at its performance. As said before, it is one of our most selective Xtals we ever devised.

MRL #18 Diode-Transistor Kit, with battery. 14-18. 1½ lbs. 7.95
Same wired and tested and with battery. 14-18-W. 1½ lbs. 9.95
DP-18 by itself. .10

MRL #10 (Revised) All-wave Diode-Transistor Set.



Our original #10 Crystal set has lots of good reports. Some users, in Canada, regularly play Moscow with it- as well as other DX stations all over the U.S. In cities - they cut out the powerful locals with ease.

However, we all like just a little more power to make those weak stations "boom in" - so we added a Transistor amplifier and volume control to our original circuit. Now, when you just barely hear a weak station - the control can bring it up to room volume. The knob also cuts off the battery drain.

The 2-pole switch runs one side to the stand and the other to Fahnstock clips so you may use any fixed Diode. With this lever, you can turn from a fixed to adjustable detector without knocking it out as would occur with a toggle-snap switch.

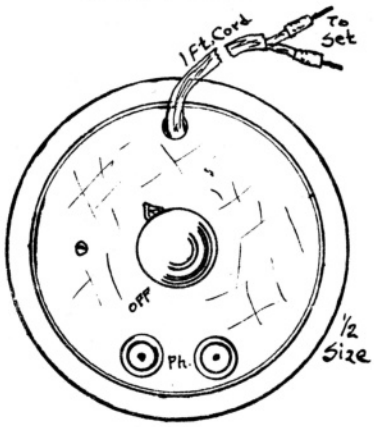
The set uses our original 10-A Hi-Q celluloid coil, which we've found to be most efficient. The selectivity is very good - we're separating about 24 locals here. We have also played police, airports, Hams, ICW code, etc.

DP-34 has been completely revised. It also shows the layout for the #10 country coil, which also uses the same panel layout. A pictorial wiring diagram makes it easy to build and wire, with short leads for efficiency. The set mounts on a 5½x7 Compo. panel. All parts, fittings, wire, hardware, solder, etc. are furnished. Price of kit is the same as for individual parts.

We furnish a 4.3 v. Mercury battery, or equivalent, with each kit. Any battery may be used 1½ to 9 volts - the more battery - the more volume. Battery holder allows quick changing without soldering. Because a TRX draws so little current - the battery lasts a long time.

MRL #10 Kit. with Diode, Steel galena, battery, DP-34 and all parts. 14-7. 2 lbs. wt. 8.50
Same, wired and tested for best results. 14-7-W. 2# 10.50
DP-34 by itself. .10

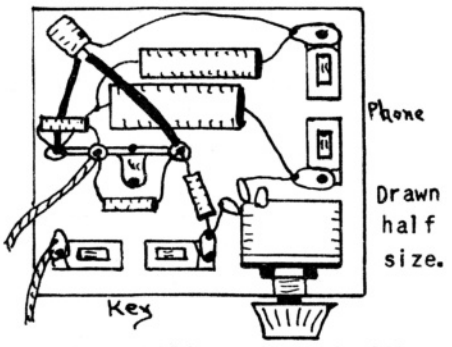
MRL #16 Transistor Small Set Amplifier



Here is one of the handiest rigs for the Crystal and 1-tuber Fan. It is a Transistor amplifier built into a plastic box with a removeable lid. You may reduce the volume to almost zero -or boom in those weak stations. It takes a penlite cell which clips in. The 1 ft. cord plugs into phone tip jacks of your set. It brings volume to best tone. The battery is not furnished.

14-14. Amplifier kit. ½ lb 3.50
14-14-W. Same wired, but including the battery..... 4.50
New DP-16 details, alone .10

MRL #41 Transistor Code Oscillator



This oscillator sounds like a tube transmitter. Tone controlled by knob. May also be used as an audio oscillator if desired.

Connect any key in front and magnetic phones at right. Uses 1½ to 9 v. battery, but as TRX only draws ¼ ma. it is economical. You can mount batt. on base if desired; plenty of room.

Easy to assemble. All parts furnished, down to solder, etc. Kit furnished for practically the cost of the parts only.

MRL #41 TRX Code Oscillator Kit. 14-9. 8 oz. wt. 2.75
Same, wired. 14-9-W. 3.75
DP-41 by itself. .10

MRL #10
Crystal Set Notes.

DP-34, #10 KIT.

The #10 has been one of our pet crystal circuits. It has been very much revised from the original broad-tuning DX set. In this business one must try to adjust circuits to meet a maximum of conditions. The fellow in the City wants a very selective set due to strong ground waves of nearby transmitters. Country operators may use a set that is broad - but he can reach out for long distant stations. It is hard to design a set that has highest efficiency in both places.

CITY RECEPTION.

Our regular #10 is designed for selectivity in the City, altho lots of Fans are getting good DX reception in the Country with this setup. Most of our DX reports are from Fans using the regular City #10. We figure that if you have strong transmitters within 25 miles of you - the regular #10 is alright. Tuning should be very easy to handle in the single dial set.

COUNTRY RECEPTION.

The difference between the #10 City and Country circuits is the latter has many more turns wound over the secondary, for the most transference of energy. You may purchase this #10 Country Coil for $1.50 from us - and make the change if desired. It requires but the unsoldering of the coil taps on the coil and the other coil and secondary leads. It is easy to follow directions.

If using the #10 circuit in HB 17 you may use one side of the 2-gang .00035 as C-1. Or, if you wish, you may use the 2-gangs in parallel to make .0007 mfd. for a greater variation in tuning ranges.

A VARIABLE SELECTIVITY IDEA.

Some want broad tuning; others want loose coupling. To satisfy everyone it is possible to make a variable selectivity. Wind a 1½" Bakelite tube 2" long with 30 turns #22 DCC and bring out ends. Substitute this for the regular secondary. Push it in and you get tight coupling and broad tuning. Pull it out and you will sharpen it up. Find the best setting for your location and lash it down with Cellophane tape. In case you are using the large Country coil, with all the turns you may still use this adjustable secondary coil with good results. Try reversing the leads & you may better reception on the weaker stations.

MRL #10 AT SEA.

S. S. "Sea Cloud" E. E. R: "It will interest you to know that at 10 pm EST. in Lat. 13 N. Long. 81 W station WING, Dayton (1800) was heard very well. The next evening the Central American stations were too strong to permit hearing the U.S. stations as we were just entering Cristobal, C.Z. On the evening before, about 200 mi. north Ft. Wayne (1600); Nashville (1500); Little Rock & Dallas (1600) came in very well. Main Antenna was 150' flattop 100 ft. high, set grounded on hull. The crystal sets are very interesting. More later."

HI-GAIN COUPLING ON THE #10.

Coupling from the Aerial to grid of first tube or from plate of first tube to grid of second is a favorite method of getting hi-gain in midget mantel sets. In the #10 solder a piece of insulated hookup wire to the Ant. lead and wrap it loosely around the catwhisker lead on the secondary. The more turns the more coupling. A similar effect is obtained by inserting a trimmer cond. between Ant. and whisker. (Remember the neutrodynes?) The more capacity the more coupling. Both methods reduce selectivity.

#10 AS SHORT WAVE CONVERTER.

C. G., Del Paso Heights, Calif. writes that he uses the #10 ahead of his superhet. to receive Police anf Amateurs between 1.7 to 5 mc. His superhet. has a built-in Ant. with a primary on the same form. He hooks the output of the #10 at tip jacks to this primary. Turn the Radio to around 1100-1200 to find a blank spot and tune #10 as usual. For the Fan without a SW receiver it will be very rewarding. Other data on Crystal converters see DP-59 for explanation.

NOVEL AERIAL AND GROUND ON #10.

G. D. W., Massillon, Ohio reports he has been using #10 for over a year. In Lawrence he used a 4-wire Ant. as shown in HB-2, 110' long and 35' high. Each wire brought in to a SPST switch. By varying them it was effective on DX. Now in the city he has no long Ant. but buried 12' of copper pipe in ground so he has a good ground anyway. He found a 14" wide built-in TV Aerial was good for Ant. He ran #10 into a phono. amplifier from phones. He also ran it to grid and ground of a 3-tuber for amplifier.

AMPLIFIER FOR #10.

Our new DP-12 gives a simple Transistor amplifier, that will make the #10 work a speaker with good volume. Just hook the phone tip jacks to the input. You can easily tell which way it works best. You will be able to shorten your Aerial for better selectivity and bring in those weaker stations.

SELECTIVITY, COIL CHECK, XTALS.

Ill., Chicago, R. D. M.: "The #10 is the first set I've found to separate those 50 KW. babies and bring in those weak suburbans. Your #2 and 10 are the only ones that can do it here and I have experimented with a number of circuits. I use 90' #14 solid between chimneys and a radiator for ground, which isn't too good here. #10 does a good job on a 1220 kc. local that my AM-FM TRF job has trouble with.

"My standard test for output is a 0-500 Micro-ammeter in series with phones. Readings run between 350-400 micros., depending on length of Aerial.

"I've tried many minerals from all over the World- having about 70 on hand. A real good Galena can beat even the Germanium for DX sensitivity.

"Here is a test on the MRL #2 Celluloid coil. (#10 is constructed similarly.) I ran this test on a General Radio bridge (GR-Q) in the Lab. where I work. At 600 kc. I got a reading of 215, which is very good. At 1500 kc. it banged the meter off the scale. Distributed capacity of the coil is quite low - about 11 mmfd. I gave the coil a coating of Krylon (pure Acrylic) and when it dried the reading was the same. It prevents moisture forming on the wire." (This 2XM Celluloid form is one of the secrets why MRL sets get DX.)

KINDS OF CRYSTALS.

Diodes, which do not need adjusting, cannot come up to Steel galena, Iron pyrites, Silicon or Carborundum for selectivity. Due to the difference in impedance of Diode germanium. We selected fixed Carborumdum, with battery, in the #10 because it would hold its adjustment and give good response at the same time along with selectivity. To better work at the critical point of Carborundum try 3 volts in series with a 1000 ohm wirewound variable resistance. For simplicity we have used but 1½ volts, but operation can be improved with proper adjustment of voltage.

SEE BACK ISSUES RB&H FOR MORE.

Scattered thru these copies U will find a lot of info., reports, etc. we didn't want to repeat here.

One fellow in Kingston, Ont. gets Moscow (7000) 1 hour at a time, every nite. Also BBC (5200) every nite besides numerous others over 200 miles, including Hams, Police, planes, etc.

Chicago gets thru heavy QRM in his area to get Calif. (1800) on SW. Says it is the first Crystal set to work good there.

Phoenix gets 700 on SW.

Wyoming easily gets 750 miles.

Calif. gets 46 stations first nite - including 13 Mexicans.

Tennessee 950 miles. N. Dakota 1400 miles first nite.

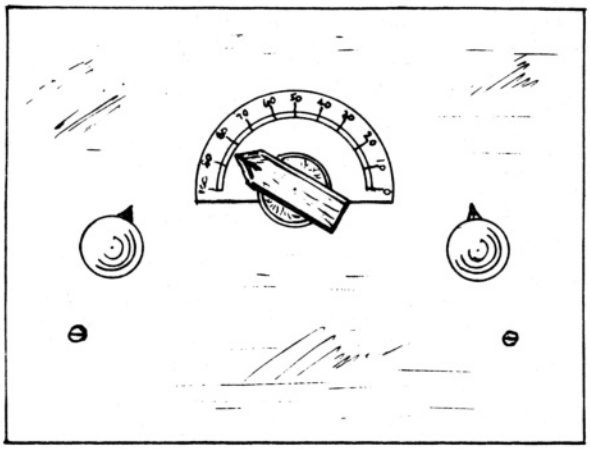
You, too, can chalk up some of the good ones. Try some of these.

See CAT. page K-2 about kit.

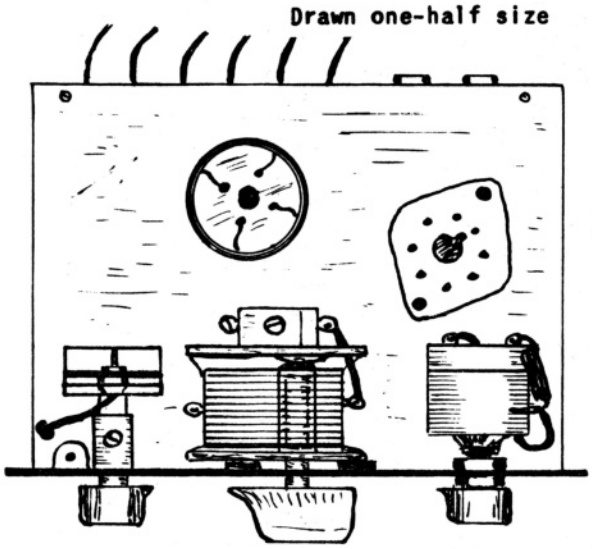
Or, 12¢ for DP-34.

MRL 1-TUBE D.C. ALL-WAVE RECEIVER KIT

Best distance reported 12,000 miles



Drawn one-half size



$6.50

Plus 2 lbs. Parcel Post

Hundreds of these little 1-Tube Kits have been sold to satisfied customers. If one compares the advantages found in this Kit, there is nothing on the market at near the price. The utmost care has been taken to produce an efficient 1-tube Kit, and still make it easy to build.

It uses a 4½" x 6" Aluminum panel, which, besides making a neat appearance, tends to offset any body capacity effects.

A composition base is used, so grounding troubles are mostly eliminated. A wooden back-strip is used to hold phone tip jacks and battery wires.

The usual set of this nature has but two controls, while we use 3. The third one operates the Antenna condenser from the front of the panel. This is the most important part of the set, and the reason for most DX. Most companies use a cheap hard-to-tune trimmer condenser at the rear, instead.

The best parts are used, to make the set operate more efficiently. Some of the parts are made by us.

The Kit is easy to wire if you follow directions given by **HB-4**, furnished with the kit.

Set is lightweight - only 12 ounces, but shipping makes it run over 1 lb. It may be taken on camping trips or carried in a suitcase. It has been used on boats, bikes, etc.

It has low drain on batteries, - some Fans say batts. seem to "never wear out." The B-battery should last at least a year, and flashlight cells R easy to buy.

Oscillation is good on Short wave bands. The 40 meter band is the best - where most of the DX is obtained.

Any Aerial or ground is used, altho in the City, we prefer a short one, if a nearby station has a strong ground wave.

The set will run a speaker on loud stations, under certain operating conditions.

The Kit gives you an all-wave set for little more money than a good Crystal set kit. It just takes a few seconds to change from one band to the other.

Any kind of phones may be used but we prefer about 2000 to 5000 ohm DC resistance. Set is not hard on phones.

Handbook 4 (see A-4) may be referred to for more details. This is furnished with the Kit, so you get all information.

Instead of the BC coil, previously furnished in BP-2 kits, we now furnish a Hi-Frequency BC & a Lo-Frequency BC coils to more than cover the BC band. The Hi-F goes down to Police and spreads the 'peanut' stations all over the dial, so many will be found you never knew existed before. The Lo-F BC coil goes up to the Ships, and puts the Lo-F BC stations at the bottom of the dial. This system has many advantages.

The Kit was designed for the 1C5gt power output pentode, that gives the set lots of gain. Some may prefer the 1Q5gt, beam power amplifier, with a little more gain. Both tubes fit the same socket.

5-prong coils **(Type 5-A)** may be specified for the kit and accessories, if desired, at the same price. We may use the 5-prong forms in case we run out of the 4-prong. We still allow 2¢, plus postage, on any 4-prong tube bases of 1-3/8" diameter U could send in to us.

While this should out-perform any similar set, we cannot guarantee any specific distance, or station, due to varying conditions under which it may be operated.

MRL 1-tube DC All-wave kit; all parts; Hi-F and Lo-F Broadcast coils; HB-4. **CAT. 14-3. 2# 6.50**

Same, assembled, wired and tested. **CAT. 14-3-W. 2 lbs. 8.50**

FOLLOWING ACCESSORIES ARE EXTRA:

Set of 4 MRL Type A Hi-Q Celluloid Short Wave plug-in coils, 20,40,80,160 meters, with DP-63. **CAT. 7-1. 8 oz. wt.....3.00**

MRL Type A HI-Q Long Wave band plug-in coil. **CAT. 7-5. ½# 1.00**

1C5gt new tested tube. ½#...1.25

(or) 1Q5gt tube. 4 oz. wt...1.50

HB-4, if bought separately.. .50

#2 1½ v. Flashlight batteries. **CAT. 3-1. 2 cells for.....40**

22½ v. B-Batt. buy elsewhere.

Headphones, see **CAT. P-1.**

Aerial supplies, see **CATALOG.**

DON'T FORGET POSTAGE.

MRL 1-Tube Notes.1

HB-4, 1-Tube Kit.

There is no end to the demand for our 1-tube kits. Under good conditions they really step out. Kits are sold for the price of parts, but panel, base, etc. are all drilled, ready to fasten together. Here are just a few of our best reports. Distances OK.

Texas, Athens, W.F.M.: "After 10 years of building sets, your 1-tuber is best. Canada every p.m. Been making reports for over 5 mo. and gotten QSL cards from Australia (8800); Switzerland (5600); Spain (5200); Guatemala (1400). Play local on 6" speaker with good volume. Like Flyer."

Idaho, Moscow, J.P.: "On your 1-tuber the 31 m. band sure has been hot. Logged 6 new countries and 3 old ones, as P.I. (7200); Romania (5700); Spain, Hungary, Moscow (every nite) (5600); Japan, Switzerland (5200); Denmark Sweden, London (5000); Norway (4800); Guatemala, Costa Rica, Ottawa (1800); XERB (1100). Have London over 30 min. periods. In 1½ hrs. I got 10 Calif. Hams on 20 m. Get better results on 12' Ant. Use Loopstick and var. con. for wave trap. Entered "Boy's Life" contest in 1956."

Canada, Lulu Is., B.C., R.P.V. "Never believed such pickup pwr. could be obtained with 1-tube. I get 3 locals with no Aerial or ground. Use 20' inside and a 75' outside for SW. In about 1 month I received 40 stations, including Australia (6500). You're doing a great job in small sets."

Guadalcanal during War, A.L.V. "In 1944 I received following on a 50' Ant. Berlin (9600); Moscow (8400); S.F. (6100); India(5600) Tokoyo (3600)."

Iowa, Marengo, G.S.: "Thanks for starting me in Radio. I am 15 and the 1-tuber was the first set I built. Have received 26 BC stations as far as San Antonio (1050) in 2 weeks."

La., Houma, A.M.: "Surprised at reception of my 1-tuber. You may print this. A 2-nite log follows Hawaii (4200); NYC (1400); Denver (1200); 3 in Mexico City (1000); Cuba (800) & 13 more BC. Also Marine phones & tugboats. I have many un-identified."

Canada, Alta., Tomahawk, B.R.: "Still logging DX on 1-tuber. I got Mexico City (2600), New Orleans (2200), L.A. (1400) on BC. Ohio (1750) on 80 m.; NYC (2400) on 40 m.; Australia (8000) on 20 m. band. U may print this."

N.Y., Amsterdam, W.O.: "I have had one of your 1-tubers for 6 or 7 years, so am ordering another. The longer I work it the better I like it. Some of the DX stations were Bulgaria, Moscow (4800); Switzerland (4000); and London (3600)."

SSB on 1-TUBER and a-3-DAY LOG.

Ohio, Warren, J.S.: "I'll match the 1-tuber with any small communication receiver as S-38-D, AR-2, etc. at night.It also does pretty good in the daytime.

"Because I didn't have a signal generator to set the trimmer I bought a $2 .00014 midget cond. and substituted for the .00035 & the trimmer. (See note below.)

"For some Fans that have heard Single Side Band (SSB) transmissions and don't want to pay $250 for a set - they can get it on the 1-tuber. Center the knob on an SSB station and bring up regeneration like receiving code. Tune a little to the right or left of the signal until voice sounds like a 45 rpm. record doing 78. Tune a little to the left or right until voice becomes natural. It is a little hard at first but you'll soon get the knack. On a super-het. just flip the BFO switch and tune like the above.

"Here is a 3-day log. 20-40-80 means received on 3 coils: Brazzaville, Fr. E. Africa 20 (7100); Bulgaria 20-40 (5400); Moscow 20-40-80 (5000); Vatican 20 (4900); Prague 40 (4800); Budapest 20-40 (4800); Poland 40 (4700); Yugoslavia 80 (4700); Berne 40-80 (4500); Germany 20 (4300); Spain 40 (4200); Belgium Holland,Paris, Denmark 40 (4100) Tangier 20 (4000); London 20-40-80 (4000); Ecuador 20-40 (3200); Colombia 40-80 (2600); Calif. 20 80 (2200); Guatemala 40 (1900); NY 20-40 (700).

"My Ant. is 40 ft. long and 20 ft. high and pointing East South east. You may use my name."

Pa., Smethport, W.A.D.: "No new DX on the #2 Xtal, but on the 40 m. coil I got Belgian Congo OTMI (7200) and lots of SW and Hams."

Calif., Sunland, D.T.: "My 1-tuber still bringing in Melbourne (8200) every a.m. and in the evenings it is Moscow (6200) and many others in between."

ADJUSTING THE TUNING TRIMMER.

If you don't own a signal generator you may adjust the tuning trimmer on the 1-tuber easily without it.

Insert the A-HF-BC coil and screw the trimmer clear down. Also turn the Ant. cond. and the main cond. clear in. Find a station that tunes near 950 kc. and back off trimmer until it comes in good. Cut Ant. to a few feet and adjust again. It will then be adjusted correctly for all A and 5-A coils.

If you'd like to substitute an expensive .00014 for the .00035 and trimmer - be sure to get one with friction bearings. If ball-bearings, fasten some pigtails or brush connections around the shaft to prevent noise on 20-40.

HB-4 has over 7 pages of condensed reports by cities. We now use a globe for distances.

SUBSTITUTING 6G6g TUBE FOR A.C.

Luckily a 6G6g tube fits a 1C5 socket. Also our 1-tuber uses #8 prong for a tie point for A-B- to ground and switch.On the 6G6g tube this is the grounded Cathode. Therefore, hook a 6.3 v. fil. transformer sec. to A-Aplus and use the same switch on panel to operate A & B. Pull out 110 plug when thru. Comparing tubes, the 1C5gt has a power output of .2 watts at 80 v. while the 6G6g has .6 at 135. Use the same 22½ v. on the B-battery.It will give a lot more power and no A's.

PROPER B VOLTAGE FOR 1-TUBER.

Correct voltage adjustment of all elements of a tube is best for top performance. Years ago we adjusted the sensitivity of a regenerative set by adjusting the tickler, the filament supply and the B supply on the 201-A's. A screen grid tube adjusts better by regulating the voltage to the screen.During the early 20's with my ship receiver I inserted a variometer in series with the tickler coil for much finer adjustment on DX stations.

Hook a 1-2000 ohm volume control in series with the 22½ v. B and get best operation.Some Fans operate the 1-tuber on as low as 9 volts. The best operation will be when the regeneration on a signal is smooth. You may find the correct resistance by dividing the voltage drop desired by .007 amps. (1C5), i.e., for a 6-volt drop it is 857 ohms.

USE SEVERAL AERIALS & GROUNDS.

Don't hook all Aerials together. You will get better results if you use A SPST knife switch to each one individually.You may then cut them in and out at will for loudest signal. Also use a switch on each ground. The knife switch is preferred because contacts are farther apart. Under most conditions SW stations work better on short Aerials, but you always find that exception. Run Aerials out in different directions if possible. Make a notation of the best combination in your log of that station.

USES LOADING COIL IN ANT. CIR.

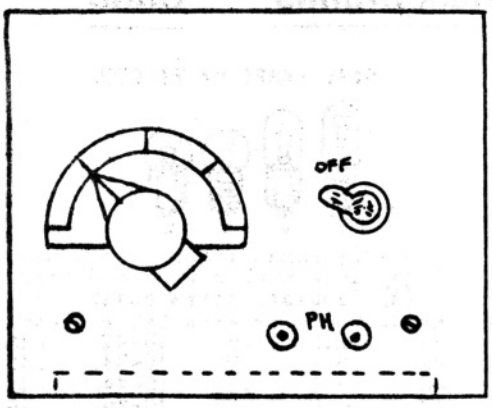
A Fan claims that using one of our loading coils (DP-33) with a slider on 100 turns of wire will make the 1-tuber more selective. It is placed between Aerial and set, and improves volume on some stations. May help tune Antenna.

TRY REVERSING FILAMENTS.

Reverse battery connections to A especially for 1Q5gt tubes. It sometimes helps on 1C5's. It may give smoother control.

Also, a 3Q5gt tube may work OK in the socket, but be sure to remove #8 CT on socket of tube.

READ all back issues of RB&H for lots more data on 1-tubers.



Drawn half size.

MRL №26

Diode-Transistor All-Wave KIT $6.50

This is a complete revision of our old DP-43 set. It is up-to-date in every way possible.

Under good conditions this set will really get the long distance stations. The crystal detects the signals and the Transistor amplifies them. This is necessary as a junction Transistor is not an efficient detector on Short waves by itself but it really amplifies those weaker stations the Xtal picks up.

Because a crystal does not ordinarily detect code signals you won't be bothered with them. The Short wave BC, Hams, planes, police, etc. will tune broad enough to keep their tones good.

At present this is the only panel-base Diode-transistor kit on the market. It is neatly arranged on a 4" x 5" Compo. panel held upright by strong brackets onto a base. This type of arrangement makes it easy to assemble and wire. Panel is furnished drilled, but you may arrange parts on base according to your own likes, or by the plan.

All new parts are furnished.

Detail Print #43 is furnished with the kit, and it gives all details necessary to assemble & wire it. It also gives data on winding your own RF coils.

The kit uses our type RF Celluloid Hi-Q plug in coils so you may work on any band. Only the RF Hi-Frequency Broadcast band comes with the kit, but others may be added. We'd suggest you order 20 and 80 meter coils in addition to the kit. If you want more overlap - order a set of RF coils. Because the kit uses a .00035 tuning condenser you need not have as many coils as with a .00014 variable condenser.

The set hooks to any Aerial or ground. You may use a longer Antenna in the country. As the secondary "floats" above ground, this tends to make it more sensitive to Short wave stations.

Any type of magnetic phones may be used - but the more sensitive the better. As a Transistor draws so little current the continuous use of sensitive type phones will not harm them. The phones plug into front jacks.

Parts are not critical. There are no adjustments to make except to switch off the Transistor battery when not in use. As a Transistor draws but ¼ to 1 m. a. of current, batteries last a long time. You may use 1½ to 9 v. of flashlite cells - the more batteries, the more volume. As the switch cuts off batteries, you may solder leads directly to Iron pyrites or Silicon. Then the Transistor will amplify them all.
them. Solder red onto the carbon positive and black to zinc neg.

Because it is impossible to get UX base sockets, we furnish bushings and screws to raise up the UX sockets so you may solder on the socket terminals.

If you want to try for extreme distance you may rig up a crystal stand and catwhisker on the front. You may then adjust the tiny catwhisker to Steel galena,

An output transformer may be placed where the phones hook on, and a PM speaker hooked to its secondary for clear reception.

The set may be placed in a small cabinet that is open in the back to plug in the coils.

MRL #26 Diode-Transistor Kit, & RF-HF BC Coil. 14-8. 2# 6.50

Same, wired, tested. 14-8-W 8.00

Set 4 MRL Hi-Q Celluloid Type RF Coils. 7-16. 8 oz. wt. 3.00

20 or 80 meter bands, each .75

DP-43, if bought separately. .10

#2 Flashlite cells. 3-1. Ea. .15

Please add postage to above.

MRL № 41 Transistor Code Practice Oscillator

Kit $2.75

To learn the code properly you need a code oscillator. And you need one that sounds like a tube transmitter. This one is small, compact and mounts on a Compo. base. Tone may be controlled by the knob over quite a range. It may also be used as an audio oscillator for testing circuits.

Connect any key to the front Fahnstock clips and any magnetic phones on the side. As key cuts off the batts. they will last a long time, as Transistor draws about ¼ m.a. Transistor oscillates on 1½ to 9 volts, but we prefer 3. Just solder one or two flashlite cells in series to the battery leads.

Kit may be assembled in just a short time and soldered up. All parts are new and furnished to last detail, including solder, lugs, washers, etc. As they are not critical it is bound to work OK. All screws countersunk to make a nice layout. You may put it in a box if desired.

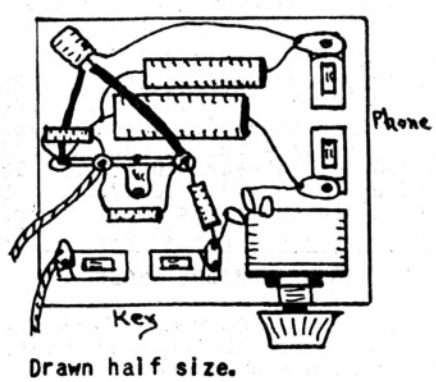
DP-41 goes with the kit. It is Photo-litho'd and completely revised. Also shows simple buzzer rig and tube oscillator. About twice as much data on learning code is included.

MRL #41 Transistor Code Oscillator Kit. 14-9. 8 oz. 2.75

Same, wired, tested. 14-9-W 3.75

DP-41 by itself..... 10

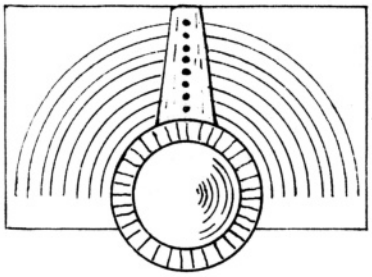
#2 Flashlite cells. 3-1. Ea. .20



Drawn half size.

Dials — Knobs — Cable — Pilot Light Assemblies — Code

MRL LOGGING DIAL & SCALE.



Ideal for logging stations directly on the dial scale. Large 1½" knob rotates a heavy celluloid pointer. Latter has 8 holes for 10-20-40-80-160-HF-LF-LW bands. Scale 2¼ x 3¾ is printed on light cardboard. When you locate a station, mark it with a soft lead pencil, thru the hole on the proper band. Move dial and lightly mark the call letter on the scale. May be erased later. You can now refer to the station in a jiffy. Glue scale onto the panel and mount knob. Slide the scale around to make holes follow the lines. Directions given. Will go on HB-4, 1-tuber panel.

MRL Log Dial & Scale, with directions. 10-72. 6 oz. 1.00
Scale alone. 10-41. Each .05

BAR CONTROL KNOBS.

Bakelite knobs, with engraved pointers, fit ¼" shaft. Standard on all our kits and plans. Along with the scale, they make a very neat dial layout. Replaces the old round dials on older sets.

2" Black Bar knob	10-27.....	.16
2" Red " "	10-28.....	.16
2" Walnut " "	10-73.....	.16
1½" Black " "	10-23.....	.09
1¼" Red " "	10-24.....	.20

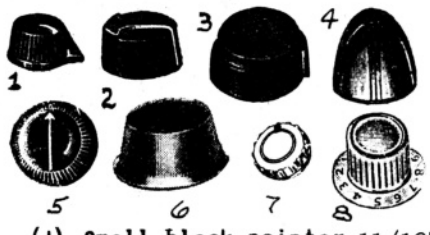
MRL DIAL SCALES.

Neatly printed on light, white cardboard. Cut out the scale, including the ¼" hole in center. Use glue, or MRL Heavy Coil cement to fasten on panel. After U mount condenser, slip it on and line scale up with a square.

0-100 for 2" Bar.	10-74.....	.05
100-0 " " "	10-75.....	.05
Celluloid cover for large scale. Tack or screw on.	10-76....	.10
0-100 for 1¼" Bar.	10-31....	.05
100-0 " " "	10-32....	.05
Celluloid cover for small scale. Tack, or screw on.	10-65....	.05

ROUND CONTROL KNOBS.

All fit ¼" shafts, unless designated. Bakelite; very neat. Descriptions show uses.



(1) **Small black pointer.** 11/16" dia. Fit 1-tuber. 10-9 .10

(1) **Same,** except walnut. Many uses on tiny sets. 10-10.. 10

(1) Same, except red. Is very flashy on small sets. 10-17. .12

(2) **ROUND dome knob.** 3/4" dia. Walnut. Use on Verniers, midgets or vol. controls. 10-11.. 10

(3) **Round dome knob.** 7/8" dia. Walnut. Same use. Fancy for most midgets, VC, etc. 10-12.. 10

(4) **Pointed dome knob.** 3/4" in dia. Walnut. OK for same use, or for small spaces. 10-21.. 10

(4) **Same,** except 7/8" dia. OK for Xmtrs, midgets. 10-22.. 10

(5) **Arrow knob.** 1½" dia. Brown engraved arrow. Good for Xmtr. switches, panels, etc. 10-13.. 10

(6) **Same,** except no arrow. Has walnut finish. Many uses as console sets, Xmtrs, etc. 10-14.. 10

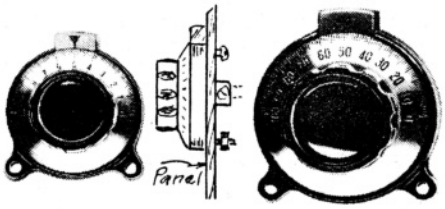
(6) **Same,** except 3/16" shaft. Many uses around shop. 10-15..08

(3) **Push-on knob.** For 1/4" dia. flat-side shaft. Various shapes, sizes & colors. 10-20.. 10

(7) Round. ⅜" dia. x 5/16" hi. Ivory with gold ring and pointer and very decorative. 10-48. .10

(8) Metal dial. 1½" dia. Engraved 10-0. Neat. 10-78. .35

PRECISION VERNIER DIALS



Sometimes the Japanese come up with something good - and these dials really work smoothly. 8:1 ratio. Large black knob. Surface mounting so you won't have to cut cond. shaft, or set it back. Very professional looking. Very handy for those DX stations. In 3 sizes. Don't forget postage.

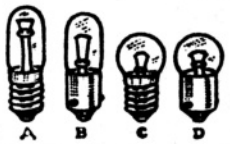
Dia.	Scale	List	CAT.#	MRL
1½"	0-10	1.75	10-6	1.25
2"	0-100	2.00	10-7	1.50
3"	0-100	2.90	10-8	2.25

DIAL CABLE.

Buy what you need, but add a little for extra measure. You can't substitute string for dial cable! We know.

		Foot
Light linen, strong.	10-36.	.03
Heavy " "	10-37.	.03
Linen & Phos. bronze.	10-38.	.03
Heavy braided, same.	10-39.	.03
Heavy " steel.	10-40.	.03

DIAL LAMPS or PILOTS.



Mostly Mazda lamps. Miniature. Give Mazda number when ordering.

Mazda	Volts	Amperes	CAT.#	Each
(A) Tubular, screw base:				
41	2.5	.5	10-42	.15
42	3.2	.35	10-43.	.15
40	6.8	.15	10-44.	.15
46	6.8	.25	10-49.	.15
48	2.	.06	10-66.	.15
(B) Tubular, Bayonet base:				
43	2.5	.65	10-67.	.15
44	6.8	.25	10-68.	.15
45	3.2	.35	10-69.	.15
49	2.	.06	10-70.	.15
47	6.8	.015	10-45.	.15
(C) Round, screw base:				
50	6.8	.5	10-46.	.15
(D) Round, Bayonet base:				
51	6.8	1 cpwr	10-47.	.15
55	6.8	2 "	10-71.	.15

DIAL LAMP SOCKETS & JEWELS

(1)	Min. screw socket.	10-50.	.15
(2)	Bayonet type "	10-51.	.15
(3)	Red jewel screw.	10-56.	.40
	Green " "	10-60.	.40
	Red bayonet type.	10-61.	.40
	Green " "	10-62.	.40

DIAL & FLASH LAMP COLORING

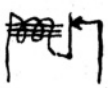
Color your dial lamps or flash light lamps red or green. Screw lamp into pigtail socket, and hook to battery. Dip into coloring and let dry, when lit. Remove coloring with lacquer thinner.

Red, 1 drahm bottle. 10-53. .10
Green, " " 10-54. .10

TELEGRAPH KEY

Fully adjustable. Ideal for a beginner or Amateur. Parts nickel plated. Mounted on Phenolic base with Navy type knob. Coin silver contacts. 12-17. 8 oz. 1.25

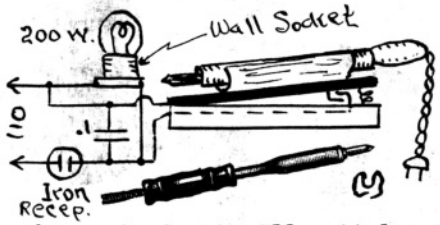
HIGH FREQUENCY BUZZER



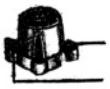
Very good for code practice. Tone varied by screw contact. 2" dia. Bak. Works on flashlite cell — but better on 3 volts.
12-20. HF Buzzer. 4 oz..... 1.00

Test Equipment—Glow Testers—Clips—Plugs and Jacks

SOLDERING IRONS.



Above stand puts 200 watt lamp in series when not using iron. In use it connects directly. You hinge the two wooden decks and adjust spring tension. Place iron receptacle, or wall socket under right side of bench. Removing the iron disconnects everything.

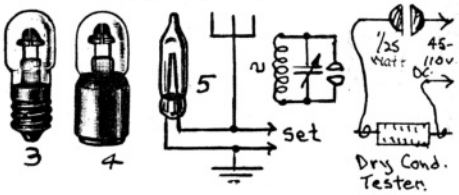


WALL SOCKET, or cleat receptacle. For soldering iron, lamps, etc. Bakelite, 11-35. 6 oz. .20

3/8" Soldering Iron Tips. For American Beauty Irons. Copper. R sharpened. **20-3. 4 oz.** .40

Soldering Iron Cord. Heavy duty asbestos heater cord, that does not kink or get hot. A long lasting type. Cut to any length. Also for Flatirons. **20-19. Ft.** .05

NEON TEST LAMPS.



(3) ¼ watt Screw. Fits Candelabra base. Starts with 55 v. AC. Used in testers. **20-7.** .75

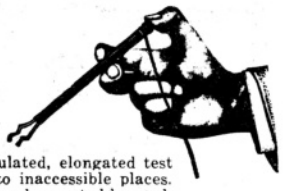
(4) ¼ watt Bayonet. Same, except base. **20-8. 2 oz. wt.** .60

(5) 1/25 watt Pigtail. Many uses around shop. Also for checking lightning flashes across A & G. More details in **RB-33.** Also 4 freq. meter as shown in upper right drawing. **20-18. 2 oz.** .15

Dry Condenser Tester. In upper right drawing we have added the best dry cond. tester - it will not work on electrolytics. Hook to a DC power supply and cond. as shown. A short is steady; poor or leaky is intermittent. One flash is OK. May also be used as nite lite- if you put a resistor in series. Other neons - same.

Jewell 59. Hyrate DC. batt. tester for Service stations. 2-0-2 v., 3" face. It may be panel mounted if desired. If resistance is used it tests breakdown of wet batts. - only sure way. Jewel 59. 3 lbs. **3.95**

SNAPPERS.



A new kind of insulated, elongated test clip for getting into inaccessible places. Spring jaws on far end operated by push of thumb on near end. A test clip, prod and retriever all in one.

A very handy gadget around the shop. Fully insulated handle. It fishes parts out of remote places. Also for starting nuts. Unscrew cap on end and insert test wire. 7" long. Furnished in red or black. **20-21. 6 oz.** .98

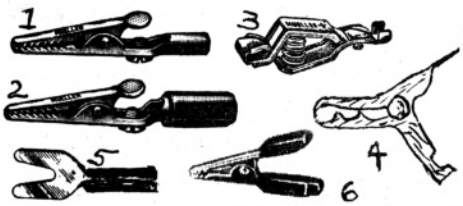
3/8" dia. Bak. or fibre rods. 4 to 5 in. long. Ok for making a neutralizing screwdriver or other uses in shop. Per rod..... 10

Insulated Screw Driver may be fashioned from a ¼" dowel. Saw a slot in end and push a piece of metal in it - glued. Wrap with a heavy thread. On opposite end you may put a piece of Alum. tubing, bent around a hex nut to fit. A good length is 8-103. 6" wood .06

TEST PROD WIRE.

41 strands of tinned wire all covered with live rubber insulation. Easy to solder. Very flexible; will not kink. Cut to any length desired. Specify color.
Black TP wire. **20-16. Foot** .03
Red " " **20-15.** " .03
Rip cord, double, **see G-1.**

TEST CLIPS.



(1) Alligator Clips. Standard. 2" TP wire goes thru hole and solders in slot. Or, a Banana plug will slip into hole. **20-10.** .07

(1) Tiny Alligator Clips. ¾"- long for small spaces. 20-24.. 05

(2) Insulated Alligator Clips. Same connections as plain clips, except insulated. Banana plug fits into end. Specify color. 2"
Black Insul. Allig. **20-12.** .18
Red " " . **20-11** .18

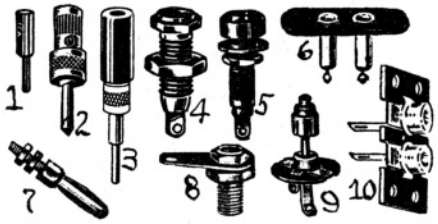
(6) Midget Insulated Alligator only 1½" long. 20-23-R. Red... 12
Same in black. 20-23-B..... 12

(3) Pee Wee Clips. 2" long for quick testing. 20-13. Each .06

(4) Needle Point Clips. G.E. A wicked grip on any connection. Gets into small space. **20-14.** .06

(5) Spade Lugs. Take Banana plugs, or may be soldered to TP leads. Fit under Binding Posts or screw terminals. **20-20. Each** .05

PIN TIPS & JACKS.



(1) Phone Tips. 17-18. (2) .05

(2) Solderless Phone Tips. The end unscrews to allow insertion of wire. Banana plug slips into the end. Nickel plated. 2 sizes: 1½" Long . 17-19. Each .10

(3) Solderless Insulated Tips. Same as above, with Banana plug fitting. In two colors.
RED Insulated. **17-20. EACH** .15
Black " .17-21. " .15

(4) Phone Tip Jacks. Nickel-plated. Standard. Takes ¼" hole. Good grip on tip; lug on back. Phone tip Jack. **17-26. Each** .10

(5) Insulated Tip Jacks. Fit same ¼" hole. Give color.
Red insulated. **17-27. Each** .15
Black " . **17-28.** " .15

(6) Double Tip Jacks. With two mounting screw holes. Standard size. **17-30. Double, each** .15

(7) Banana Plug. n.p. 1-1/16" long. With 2 nuts. Good spring. Fit most test units. Fine for horizontal coils. **7-55. Each** .12

(8) Banana Jack. n.p. ½" long. Fit Banana plug. **7-56. Each** .10

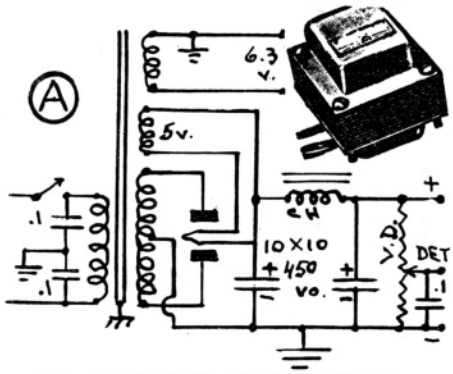
(9) Single Auto Pin Jack-plug. Sold complete only. Used for auto and record players. Pin won't slip out. **2-3. Pin & Jack** .12

(10) Double Pin Jack & Plugs. Mounted on Bak. terminal strip. Sold complete with 2 pin tips only. **2-4. Double Pin/plug** .20

PHONOGRAPH NEEDLES.

5000 Play Needle. Packed individually. **18-3. Each** .50

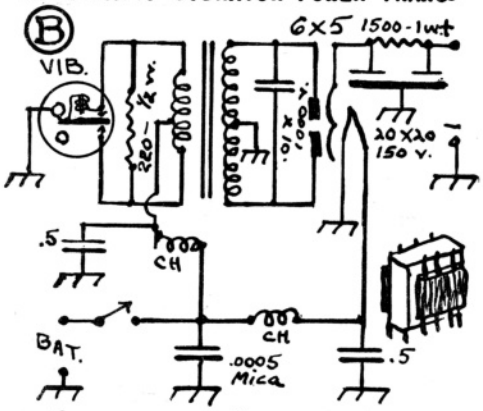
TRANSFORMERS · CHOKES · POWER · BATTERIES



110 VOLT POWER TRANSFORMERS.

Circuit shows a full-wave power supply. For new, or replacement use. May be mounted upright or half-shell on base. Is static shielded. Approx. 650 v. 50 m.a. sec.; 6.3 v. 2 a. for tube fil.; 5 v. 2 a. for rect. filament of 5W4, 5Z3, 80, etc.
Power trans. 24-10. 3 lbs. 4.25

AUTO BATT. VIBRATOR POWER TRANS.



Shows non-synchronous vibrator full-wave power supply. 6 volts from storage batt. goes thru the vibrator into pri. Transformer steps up this interrupted DC to about 600 v. Tubes 6X4, 6X5, 6Z4 84 use 6 v. heaters. An 0Z4 uses no heater. **CH** coils about 20 Ts. #14 on ¼" form Other parts, except vibrator, may be found in **CATALOG.** For auto radios.
Vibrator Trans. 24-11. 2# 2.50

6.3 VOLT FILAMENT TRANSFORMERS.

6.3 v. 2 amps. OK for several tubes in parallel. No need for a center tap as these tubes hum less than 2½ v. Compact. Good make. Fine for **DP-37** fil. trans.
6.3 v. Filament Transformer.
CAT. 24-8. 10 oz. wt. 1.50

EMPIRE CLOTH.

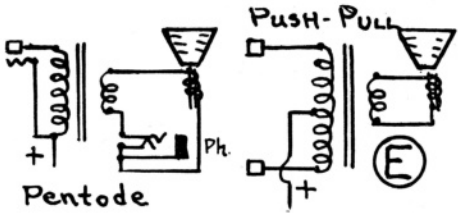
Necessary between hi-voltage windings. 1100 v. insulation. Is black. Fasten with cellophane tape. **12-28. 4 sq. in. for .01**

AUDIO TRANSFORMERS.

Transformers step voltage up or down, depending on the ratio. These input audios usually 3:1. You may reverse 1 side of pri. to see if tone & volume is improved. If audio squeals result, reduce B supply. Also shielding grid lead helps. (Use shielded wire **CAT. 2-6. 3¢ foot)**
3:1 Audio Trans. 24-18. ½# 1.50

Same, but 40:1 ratio. May be used in mike circuits, or stepping up Xtal set output to audio tube. **40:1 Audio. 24-21. ½# 1.50**

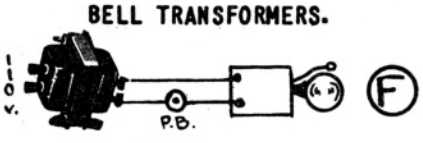
OUTPUT TRANSFORMERS.



Same physical characteristics as **(D)**. To match output of tube to pri. look in tube manual for the **load resistance.** Specs. not too critical. Secondaries match 3.2 ohm imp. voice coil of PM or Dynamic. Imp. varies as different B voltages applied. The double phone jack may be used in any VC circuit. Add 6 oz. pp. to each.
2000 ohm imp. matches 2A3, 25L6, 50B5, 50C5, 50L6, 70L7, etc.
CAT. 24-14. 6 oz. wt. .... .90
3-5000ohm imp. matches 6A3, 6L6, 6V6, 35L6, 43, 45, 71-A, 82, 83, 117L7, etc. **24-5..... .90**
5000 ohm imp. matches 3B5, 6V6, 33, 46, 47, etc. **24-12... .90**
8000 ohm.imp. matches 1C5, 1D8, 1Q5, 1S4, 2A5, 3A4, 6F6, 6Y7, 42, etc. **24-13. 6 oz..... .90**
Push-pull pentode matches 1E7, 1G6, 6F8, 12SL7, 19, 53 as per 2nd diagram. **24-6. 6 oz. .90**

Universal output transformer.
Has tapped pri. and sec. so almost any tube may be matched. Changing imp. of primary also changes sec. Adjust taps for the highest volume. **24-3. 6 oz. 1.50**

BELL TRANSFORMERS.



For use with bell, buzzer or chimes. No current used unless button is pressed. Many uses.
16 v. Chimes Tr. 24-20. 1½# 1.85

Fish Paper for heavy Trans. insulation. **12-30. per piece .01**

FILTER OR AUDIO CHOKES.

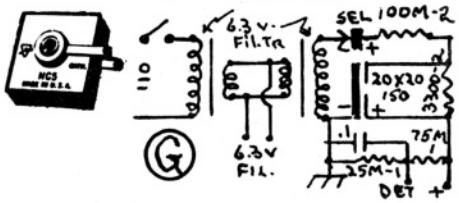
Refer to CH **(A)** for use in the circuit. To **(D)** for picture. May also be used as pri. in impedance coupling. Ratings as near as we can measure on inductance meter. Brand new.

Henry	m.a.	Ohms	CAT.	Wt.	Each
4.....	50...	170..	6-8.	6 oz.	.90
8.....	50...	200..	6-6.	8 "	1.00
10....	100...	150..	6-4.	10 "	1.25
12....	80...	300..	6-9.	1 lb.	1.50

VOLTAGE DIVIDERS, or BLEEDERS.

See V.D. **(A)** used in balancing load of Power supply. Adjustable band gives tap for detector. All 50 watt. In sizes: 100 - 1M - 2500 - 5M - 10M - 20M. Be sure to give size. **19-9. 6 oz. 1.05**

SELENIUM RECTIFIERS.



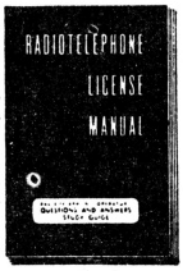
Substitute for 80, or other rectifier tube. Occupies a lot less space. Can mount on base with screw thru unit, but be sure to insulate from base. Can hook direct to 110 if 30 ohms placed in series with 110. Best layout is shown, using (2) 6.3 v. fil. trans. to lessen 110 v. shocks. **RB-30 (15¢)** shows plans for this cir. and a doubler to get 300 v. DC and fil. supply. Be sure polarity is right. 100 m.a.
Selenium rect. 3-19. 4 oz. 1.10

(H) Flashlight batts. OK for fil. or hook in series to make Heavy duty B. **3-1. 4 oz. .20**
(I) Pee wee clips 2" long. For quick testing, etc. **20-13. .06**
(I) Standard clips 2½" long. Fit storage batt. posts. **3-6..10**
(I) Heavy duty clips 4" long. For better connection. **3-11. .15**

(K) Large batt. plug for large 45 v. B-batteries. **3-4. .09**
(L) Same, but with 3 Fahnstock batt. clips for wires. **3-5. .12**

DP-49 (10¢) gives details for building complete power supply.

BOOKS FOR PRACTICE and THEORY



Radio Handbook
New 15th Edition.

Just look at these chapter titles!

- Introduction
- Oscilloscopes
- Power Supplies
- Test Equipment
- V.T. Principles
- Semi-Conductors
- V.T. Amplifiers
- FM Transmission
- Mobile Equipment
- D-C & A-C Circuits
- Transmitter Design
- Transmitter Keying
- Workshop Practices
- Transmitter Constr.
- R-F V.T. Amplifiers
- S.S.B. Transmission
- Amplitude Modulation
- Receiving Equipment
- TV & BC Interference
- Special V.T. Circuits
- Receiver Fundamentals
- Antennas, H-F, V-H-F, U-H-F & Beams
- Speech & AM Equipment
- Radiation, Propagation & Transmission Lines
- Exciters & Low Power H-F Ampls.
- R-F Energy Generation

768 pages. For all classes of Radio Fans. The Radio Bible. We send it postpaid, so please order it from us.....8.50

RADIOTELEPHONE LICENSE MANUAL.

A valuable manual and study guide that contains all necessary info. to obtain any U.S. Commercial Radiophone license.

Complete list of questions and ans. on Basic law; Basic operating; Basic Radiophone and advanced Radiophone.

200 pages 6 x 9½.

Radiotel. Lic. Man. Ppd. 5.75

WORLD'S RADIO TUBES.

Lists over 15,000 receiving & transmitting tubes from 348 mfrs in U.S. and all over the World. Classified numerically and alphabetically. A bookmarker finds a tube in an instant.

Invaluable aid to Hobbyist, Amateur and Experimenter. From most recent manufacturers' data. Very good for Radio clubs. Used in 84 countries. Printed in English in Belgium.

444 p.; 1230 figs.; 8 x 11½.

World's Radio Tubes. Ppd. 6.00

WORLD'S EQUIVALENT TUBES.

From same source as above. It gives 43,900 comparisons of equivalent, or near tubes, with differences explained. Compares all U.S. and World mfrs. of all tubes. If you have to substitute a tube, it is better to use one that works best.

331 pages, 8 x 11½.

World's Equiv. Tubes. Ppd. 6.00

OTHER BOOKS by the same company, Editors & Engineers, are as follows:

Surplus Radio Conversion Manuals #1 or #2 for gov't surplus equipment. Each volume.... 3.00
New Surplus Manual #3... 3.00
World's TV Tubes..... 6.00
All above are postpaid.

RADIO AMATEUR CALL BOOK.

The best Amateur Call book in print. Official for Radio organizations everywhere.

Lists station calls, names and addresses of Amateurs in U.S., Canada and most foreign countries. Over 200 p. of U.S. Hams; over 60 p. of Foreign. Amateurs listed by districts and alphabetically. Also given are "Q" sigs; phonetic alphabet; lots of Ham ads; new table of great circle bearings of U.S. cities.

Very handy for making new contacts. If you are a QSL'er, or building a station you need it.

A new set-up. Now in two sections. American, of 50 states at $5.00 postpaid. Outside $5.25.

Foreign section $3.00 postpaid - outside U.S. $3.25.

Published 4 times a year. The latest edition always sent. Give us the biz- and get Flyers FREE.

RIDER'S MANUALS.

Apparently many Rider circuits are not being reprinted, as we get reports of "out of print." Here we have 3 used Manuals on AM-FM circuits in very good condition. You save half on them. Shipping charge of 12 lbs. or each Manual is extra.

#	Years.	pages	List	MRL
10	1938-9.	1664	19.80.	7.50
11	1939-40.	1652	19.80	7.50
12	1940-1.	1648	19.80	7.50

Or 3 for $20, plus Express.

DIAGRAMS.

Any Commercial, or MRL circuit we can locate, drawn, or furnished you. You MUST give MODEL number and MFR. name or we can't get it. Tube lineup also helps. No pictorials drawn. Each 1.25

TV- 2.00

CIRCUITS

USED BOOKS

Due to lack of space we must dispose of part of our library. In good condition unless noted. Subject to prior sale. Give 1st & 2nd choice. No refunds or exchanges. $1 deposit on COD in US. NO COD to Canada or Mexico.

Postage extra at book rate.

Standard Reference Encyclopedia. 11 books complete. Express collect. A good set.....5.00

BUSINESS.

Chain Stores. 583 p. All details for running several stores at once. Reg. $5. 3 lbs.....2.50

Retail Handbook. 617 p. Store biz from A-Z. By Hayward. Many details. Reg. $5. 2 lbs.....2.50

Handbook of Sales Management. Hall. 995 p. Thousands of ideas on selling. Reg. $5. 2½#....2.50

Advertising Handbook. Hall. 743 p. From writing ads, printing, catalogs, distribution, all kinds details. $5, 2# wt....2.50

Retail Advertising & Selling. Hall. 590 p. About covers field of selling. $5. 2 lbs. wt...2.50

Elements of Accounting. Berrigan. Single to corpn. From A-s. Good for HS students. 2#....1.50

Handbook of Business Correspondence. Hall. 1050 p. Letters from A-Z, office methods, better English, etc. $6. 2½ lb.....3.00

Textbook of Salesmanship. Russell. 319 p. One of best selling books we've seen. From prospect to sale. $3. 1½ lbs. wt.....2.00

Economics of Business Cycles. Adams. 268 p. Why biz goes up & down. Predictions. $3. 1½#..1.50

Retail Selling Methods. Baer. 250 p. Approach, tact, how to sell more. $2.00 1½#.....1.00

Forecasting, Planning in Biz. Management. White. 267 p. Market swings, budgets. $2.50. 1½#.1.25

Personal Leadership in Business. Craig. 245 p. Training for Executives. $2.50. 1½# wt...1.25

12 Principles of Efficiency. Emerson. 423 p. Organization, efficiency, $2.50 1½#.....1.00

How to Run a Mail Order Biz. Profitably. Rice. 640 p. Slanted for squab biz, but hundreds of other good ideas. 2½#.....2.00

Market Analysis. White. 438 p. Checking all selling markets, & getting more biz. $4 2#.....2.00

Chain Store Accounting. Greer. 312 p. Methods in handling several stores. $3. 2 lbs.....1.50

Production Engineering & Cost Keeping. Basset. 311 p. Shops, labor costs, etc. 2 lbs.....1.50

Practical Business Arithmetic. Moore. 449 p. Good for brushing up on banking, etc. 1½#.....1.00

Life Insurance. Forces education manual. 668 pages. 1½#...50

Budget Control. 30 p. and the **Fundamentals of Indust. Development.** Sold as a unit. 8 oz....25

La Salle Business Lectures.. In 9 units: 3 milestones, Machinery of Office, Adv. cir., Business leadership, Retail Store, Export Dept., Knowledge is Power. All 9 sold as unit. 1½ lbs.....75

Selling. 1 by Maytag 40 pages. 1 by National Specialty Salesman Pub. 60 p. Sold as unit. 8 oz.50

NATURE.

Leng's List of Coleoptera of N.A. 469 p. Cost $12. Complete classification for beetle collector. Invaluable. 3 #.....2.50

Revision of Bembicine Wasps of A. N. of Mexico. 155 p. ½#....25

Revision of Hypeninae Moths. 399 p. Nat. Museum. 8 oz....25

Tertiary, Quat. Hist. of Point Reyes, Petaluma, Santa Rosa. 75 p. Many plates. 1 lb.....25

SELF IMPROVEMENT.

Making Money & Keeping It. 63 p. Reg. $1.00.8 oz. wt.....25

How to get a Job. 36 p. Other data on m/o. $2. 6 oz.....50

7 Health Bulletins. Typhoid; Leprosy; TB; Insurance; 1½#...25

Education of Self. Dubois. 349 Psychological. 1 lb. wt.....1.00

Major Symptoms of Hysteria. By Janet. 345 p. 2.75. 1½ lb...1.50

The New Civics. Ashley. 420 p. Excel. reading. 2 lbs.....1.00

Advanced Civics. Forman. 456 p Good reading. 1½ lbs. wt....1.00

Civil Gov't. with Ore. Sup. 85 p., also S.F. Charter. 1½ # ..25

Essays of Educational Reformers. 1874. 326 p. 1½ #.....25

Life More Abundant. 313 pages. Religious. 1½ lbs.....50

Health & Appearance. 41 p. ICS Good data for us. 4 oz.....10

Getting Most out of Life. 250 p. Good reading. 1 lb.....50

Book of Etiquette. 2 volumes. 471 p. Good. 2 lbs. Wt..(2).1.00

FICTION, GENERAL READING.

World's 100 Best Short Stories In 10 volumes. 2211 pages. Bound books. Lots reading. 4 lb...2.50

Remaking America. Franklin.285 p. Many ideas, good. 1½ lb..1.00

The Husband's Purse. Martin. 344 p. Easy reading. 1 lb.....25

Bow of Orange Ribbon. Barr.345 p. Easy reading. 1 lb. wt.....25

Vid Juletid. In Swedish. 126 p Good practice. 8 oz. wt.....15

Courtship of Miles Standish. Longfellow. 90 p. 4 oz.....10

Evangeline. Longfellow. 102 p. Poetry only. 4 oz.....10

Maryland. 119 pictures for any one interested. 1½ lbs.....15

In Brightest Africa. 267 pages Interesting. 2 lbs.....1.00

50 Roads to Town. Rest of them are Novels. 312 p. 2 lbs... 1.00

Taps for Private Tussie. 303 pages. 2 lbs.wt.....75

Lydia Bailey. 488 p. 2#.. 1.00

Earth & Hi Heaven. 288 p. .50

Gentlemen's Agreement. 275 p. 2 lbs. wt.....75

Prosecutor Trouble Shooter. 293 pages. 2 lb. wt.....1.00

Elephant and Castle. 658 pages 2 lb. weight.....1.00

The Brother. 422 p. 2#....1.00

Shriek with Pleasure. 257 p..50

JUVENILE PRACTICE.

First Reader. 111 p. 8 oz...10

Same, by Monroe. 100 p. ½#..10

Fifth Reader. 304 p. 1 lb...15

Modern Life Speller. 128. ½#.25

Speller #2. 179 p. 12 oz....15

Business Speller. Kimball. 141 pages. Bus. School. 8 oz.....25

Little Eva. Stowe. 165 p. For child reading. 1 lb. wt.....25

Ideal Orator. 150 p. Good for public spkg. practice. 1½#....25

Waiting for Papa. 1 lb.....15

Bright Eyes. About 100 p. Good for 3rd grade. 1 lb. wt.....25

COMPLETE YOUR LIBRARY.

Your Library isn't complete if you don't have all our **MRL Handbooks, Detail Prints,** back numbers of RB&H., —Our efforts are forever aimed at more and better literature.

Time is quite a factor as each project must be built up, tested

USED BOOKS WANTED.

Above list about completes our surplus books for the present. May have more later, as we are able to go thru our Library. Be sure to add **postage** on above.

If you have **Radio, Electrical, Physics** or **Mechanical** books for sale, let us **know.** Advise how much you'd like in credit for them - delivered to us. You may use book rate (See 0-1), but be sure to mark "Book Rate" on pkg. Don't ship until you get our OK, as we may have them. Advise the condition, Copyright date if possible, etc. For our Library.

PRINTING

MODERN RADIO LABS.
1131 Valota Road
Redwood City, California

Stickers have many uses. On best white gummed paper. Approx. size 5/8 x 2". We use dozens of sets in our work. Most often used for return address on envelopes. 4-line limit. **Per 500 labels .50 postpaid. Each additional line remit 10¢ extra.**

White Bond Paper. Like used in HB, CAT., etc. 16 pound stock. **50 sheets .25** & Postage.

SOME COMMENTS ON HB-8.

We have had lots of good reports on #8 - seems to have filled some of their wants. A few comments follow:

H. S. Sutton, Calif.: "Your HB-8 is about the best reading I've had for some time."

Harris L. Sue, Calif.: "Thank U for your interesting Handbook 8. Lots of valuable infos. in it for me."

Lewis N. Smith, N.J.: "Your new HB-8 is very good. Lots of good ideas in it that will come in handy."

G.H. Thomas, Wash.: "Ur new HB-8 received with great pleasure. Ur 'stuff' always provides a good evening's entertainment & gives the stimulus to keep busy experimenting."

MRL Handbook 5

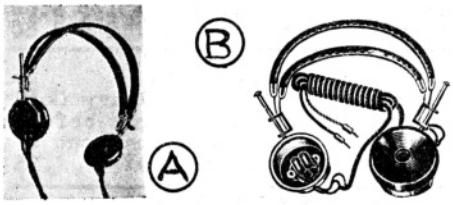
N.Y., Tonawanda, S.S.: "I am an **Electronic Engineer** working with equipment **much more** complex than Xtal sets. **Have 4** of your HB's & **am ordering 2 more.** Find Crystal **sets very satisfying** to work on. So, Ur HB's interest me."

Headphones and Accessories — Cords — Tips — Plugs and Jacks

We have been selling Trimm phones since 1935, and prefer them to others. Repeat orders from customers back us up. Trimm phones are well-built and tested for your enjoyment.

In most cases the investment in Phones is a life-time proposition, so try to buy as good pair as possible. Trimm phones take the usual hard-beating given to most phones. They are all easy on the ears.

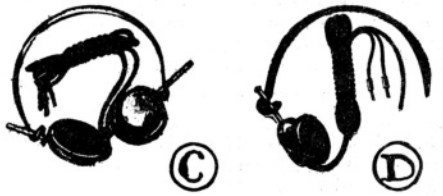
The higher resistance phones are usually more sensitive to weak signals and give sharper tuning on Crystal sets. Note that AC Impedance is about 5 times the DC resistance. **(See HB-1: "Headphones: Operation & Repair" on page A-1, for more details.)**



TRIMM FEATHERWEIGHTS. (A)

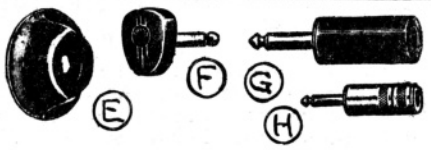
World famous as the leading quality headset for over 25 yrs. Fine for Amateur communication service where sensitivity to the weak signals is paramount, besides being "easy on the ears." Total weight of phones is 5 oz. On a small rig, or Crystal set, it is equal to an audio stage. Permalloy magnets exert a 4 oz. pull on the diaphram. The coils are impregnated to keep out the moisture. 6 ft. wearproof cord, with terminals enclosed. Fabric-covered headband. 5M ohms DC; 24M ohms AC Impedance. We believe this phone set is the tops in performance. List price $11.00
Featherweights. 17-1. 1 lb. 6.60

(B) TRIMM DEPENDABLES (formerly the well-known Professionals)
A larger phone than the Featherweights, altho still comfortable to wear. The original Trimm phone, altho much improved. Fine for general use, where good sensitivity and sturdiness must be had. Heavy Alnico V-magnets with lots of pull. Impregnated, moisture-proof coils. Mercerized moisture-proof cotton 5 ft. cord with enclosed terminals. Adjustable, plastic-covered wire headband, easy to wear. Bakelite case and cap. We obtain for you the highest Impedance of 28,000 ohms; 4000 ohms DC. List $6.00.
Dependables. 17-3. 1 lb. 3.60



TRIMM ACME DE LUXE. (C).

A superior low-cost phone set. Ideal for small rigs and Crystal sets. Bakelite case & cap. Each phone has one large coil - larger in diameter than double-coil phones, and a U-type Chrome steel magnet. It makes a very sensitive phone. 4½ ft. cord with enclosed terminals. A very efficient set for the low price asked. Weighs approx. 5½ oz. on your head.
4000 ohms DC; approx. 20,000 Impedance. Very sensitive. Uses a split Vinyl covered wire headband, easy to wear. List price is $4.35. **17-52. 8 oz. 2.61**
2000 Ohms DC; approx. 10,000 Impedance. Has light steel headband. Hundreds sold. List price is $3.60. **17-9. 8 oz. 2.16**
(D) 1000 Ohm Single phone and light steel headband. Weighs 3½ oz. on your head. List price is $2.20. **17-10. 6 oz. wt. 1.32**

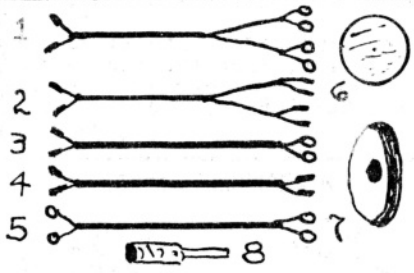


(E) Ear cushions. Made from sponge rubber. Keeps ears comfortable for hours. Reduces the sound leakage. Useful in Labs., Amateur svc. and long DX sessions. Fit most phones. Beware of cheap imitations. Sold singly if desired. List per pair $1.50.
Phone cushions. 17-12. pair .90

(F) Flat Phone Plug. Non protruding; not in the way; all the edges rounded. Sturdy, plastic construction. No shocks due to exposed parts. Tips fit into the holes from bottom. Stay cord fits thru hole. List 75¢. **17-15. .44**

(G) Standard Plug. In general use. Plastic shell prevents a shock. Removed for fastening in 2 prs. of phones, with spades, tips or eyelets. Hole is for a stay cord. List 65¢. **17-13. .40**

(H) Small metal Plug. Occupies small space. Shielded. Heavily plated. **CAT. 17-47. 4 oz. .40**



PHONE CORDS.

Made from best grade of tinsel cord. Very flexible. Check type before ordering. Good length.
(1) Double lugs/tips. **17-35. .65**
(2) " tips/tips. **17-36. .65**
(2) " tips/tips, fit Trimm Featherweights. **17-50. 1.65**
(3) Single lugs/tips. **17-37. .45**
(4) " tips/tips. **17-38. .45**
(5) " lugs/lugs. **17-39. .35**

DIAPHRAGMS. (6)

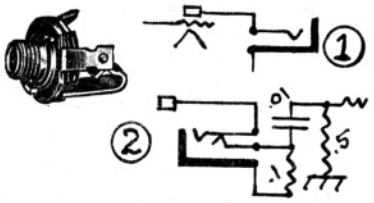
Cut to any size to 3" in dia. Tinned. Give exact diameter.
Diaphragms. 17-16. Each .15

PHONE CAPS. (7)

If not sure about fit, send in old phone, with postage and cost of cap. Prices are for one cap.
Trimm Rex.....**17-22..35**
" Dependable, or Murdock No. 56.....**17-23..40**
Empire, American Bell or Dixie phones.....**17-24..25**
Brandes.....**17-25..35**
Cannon Ball, Crosley or Federal No. 53.....**17-44..30**
Used ones in proportion. 4 oz.

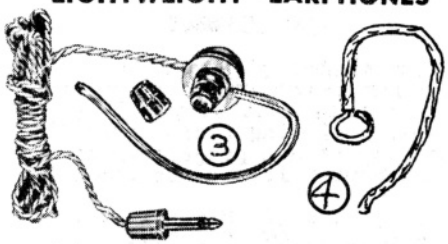
(8) PHONE TIPS. All standard, and new stock. Wrap tinsel with fine wire before soldering. Tin inside. **17-18. 2 tips for .05**

HEADPHONE JACKS.



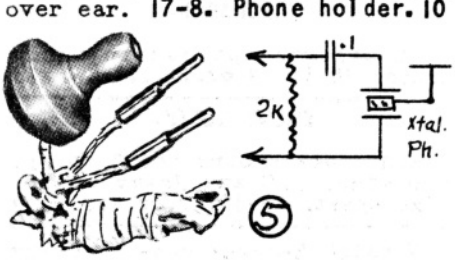
(1) Single phone jack. **17-31..30**
(2) Double " " Closed **17-32..35**

LIGHTWEIGHT EARPHONES



(3) Dynamic type for TRX, Rdo. and TV listening. 2 diff. sizes ear plugs furnished with band. Min. phone plug; flexible cord. 2000 ohm impedance. Hooks direct to output. **17-4. Dyn. Phone 1.25**

(4) Xtal earphone holder fits over ear. **17-8. Phone holder. 10**



(5) Crystal earphone. Molded plastic shell fits into ear. The diagram shows output to crystal type phones. **17-2. Xtal phone. 89**

Panels—Mounts—Cements—Speakers—Grilles—Microphones—Jacks

PANELS & BASES.

Brown, tempered **Compo. panels** are used in most MRL layouts. Are easy to mark, drill and keep in good condition. May be sawed and planed, just like wood. You may lacquer them, if desired. Following sizes cover most MRL projects. Shipping weight about 1 lb. to the square foot extra.

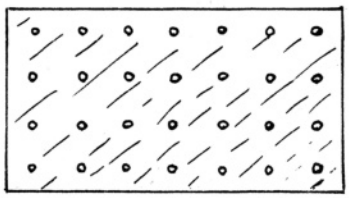
3½ x 5½	.11	6 x 6	.14
4 x 4	.09	6 x 7	.16
4 x 5	.10	6 x 8	.17
4 x 5½	.11	6 x 10	.20
4 x 6	.11	6 x 12	.23
5 x 6	.13	7 x 8	.19
5 x 7	.14	7 x 10	.23
5½ x 6	.14	7 x 12	.26
5½ x 7	.16	8 x 8	.21

1/8" Compo. **16-2. 1 lb. ft.. 36**

5/16" Compo. Panel. Small pcs. CAT. 16-18. 3 sq. inches for .01

PANEL PEGBOARD CUT TO SIZE.

Due to so many holes, it is FB for quick bench layouts of circuits. Many of holes are just the



right distance - all 1" apart. We cut so holes have an even margin. Same price as our Compo. panels. **16-12. Pegboard. size?**

1/4" PLYWOOD.

Our sanded plywood does not contain pitch pockets, knots, etc. but is sent to you in good shape. Following sizes cover the majority of MRL projects. Postage runs about 1 lb. to the foot.

3 x 5½	.06	5 x 6	.10
2 x 6	.07	5 x 7	.11
3 x 3	.07	5 x 9	.13
3½ x 5½	.09	5 x 11	.15
4 x 4	.08	6 x 7	.12
4 x 5	.09	6 x 9	.14
4 x 6	.09	6 x 11	.16
5 x 5	.09	8 x 9	.17

¼" Ply. **16-7. sq. ft. 1 lb.. 24**

SANDPAPER.

10 assorted pieces in handy sizes. **16-11. 4 oz..... 15**

EMERY CLOTH.

Many uses around the Shop. In two sizes 1/0 and Heavy. Full-size sheet. **16-19. 2 oz..... 10**

Scratch Remover gone. You may substitute Linseed oil as it may work almost as well.

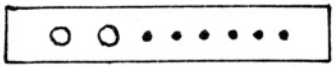
Panel Brackets, See Sec. H.

MRL 1-TUBER PARTS

Aluminum panels. Only size now carried in stock is 1/16 x 4½ by 6 at **30¢ each**, plus postage. You may give Aluminum panels a nice finish by rotating steel wool on the surface and lacquering.

16-8. 4½x6 Alum. panel for MRL 1 Tuber (HB-4) set. 6 oz. .30

MRL BACK STRIP.



Altho designed for our 1-tuber (HB-4), it may be used for other rigs. 3/4 x 5½" long. Two holes drilled for tip jacks; 6 for the batts. and A-G leads. #2 x ½" FH wood screws hold it to base. The following scale cements over the holes. 16-1. MRL Back strip .10

MRL BINDING POST STRIP SCALE.

As used on our 1-tubers, but is OK for any DC set. Keeps from getting batts. mixed up and is neat appearing. 4-21. Scale .05

MRL 1-tube Kit. Please! We do NOT furnish a tube with the set - as some have expected. CAT. page K-3 says "Following accessories are extra." Please observe. Thank you.

See J-1, #8-118 for Ant. Cond.

MRL CEMENTS & THINNER.

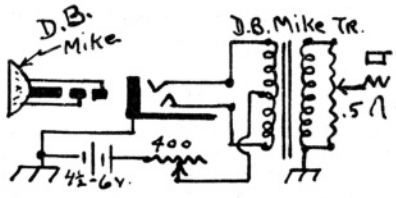
Bottles have trebled in price, and hard to get, so uppage is necessary. We use only time-tested materials we have used for a long time. Best for purpose.

MRL Heavy Cement. Binds wood, celluloid, leather, models, paper, speakers, plastics and many others. **7-58. FL. oz. bottle .25**
2 Oz. .45

MRL Light Cement. Especially for binding coil Wires. Hi-Q as it does not change setting on a station. Moisture-proof. Prevents corrosion. 7-57. **Oz. .25**
2 Oz. .45

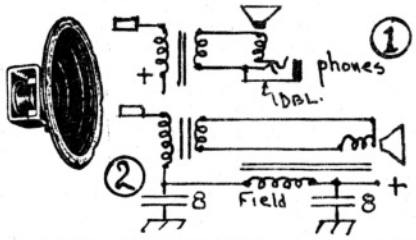
MRL Thinner. Thins either type of cement, lacquer, etc. Also OK for cleaning brushes, chassis, etc. **CAT. 7-59. FL. oz..... 25**
2 Oz. .45

MICROPHONE JACKS.



For 3-contact, or double button mikes. For 2-contact, see sec. P of CAT. The diagram shows use of the DB mike and jack. 12-31. Dbl. button mike Jack. 40

SPEAKERS



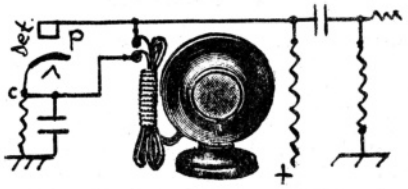
(1) PERM. MAGNET DYN. SPKR.			(PM)
2½"	no transf'r..	21-20.	1 # 1.60
3"	" "	21-11.	1 # 1.60
4"	" "	21-12.	1½# 1.60
5"	" "	21-13	1½# 2.00

(2) EXT. FIELD ELECTRO-DYNAMICS.			
3"	no Transf'r..	21-1.	1 # 2.00
4"	" "	21-3.	1 # 2.75
5"	" "	21-4.	1½# 3.00
5" with	"	21-17.	2 # 3.50

GRILLE CLOTH

Cement on with MRL Heavy Coil cement (7-58. 25¢). Iron before you put it on. Keeps dust out of speaker. **21-16. Sq. foot .35**

JUNIOR MICROPHONE



Attaches to any AC or AC-DC Radio without extra wiring. Goes from plate of det. to cathode or ground, as shown. 4" high, with pushbutton on front. All directions, fittings, etc. Hook it up and fool 'em. **12-40. 1 lb. 1.60**

NAVY CARBON MIKE.

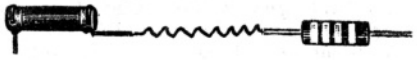
New. Used by Naval aircraft. OK for mobile, Hams, etc. Also for TRX speech amplifiers or modulators. May be fed into mike transformer or directly in the cathode of first stage without batt. or transformer. 1 ft. cord and plug - which may be extended if desired. 1" dia. Very neat. 12-1. Navy mike. 4 oz. 1.50

LAPEL CARBON MIKE.

Supplied with clip. In black plastic case with 3½ ft. shielded cable. 1½ in. dia. Frequency response 90-10K cps.; 10 dbls.; very sensitive. Current 2 ma. May be used as above mike, with or without transformer. List $2.50. 12-5. Lapel mike. 6 oz. 1.60

Resistors—Controls—Wire-Wound Power Resistors—Rheostats—Ballasts

CARBON RESISTORS.



Values of resistors in a circuit are never critical- as given by Engineers - so the nearest value may be used. Ours average 10% tolerance. Note our lowest prices as compared with others.

½ WATT CARBON RESISTORS. 5¢

Where can you find such a big variety of ½-watters - and only 5¢ each? Please order only the following resistances:
3 - 12 - 13 - 22 - 68 - 82 - 100
120 - 150 - 200 - 220 - 250 -270
300 - 330 - 350 - 390 - 400 -450
470 - 500 - 560 - 600 - 700 -800
820 - 1K - 1200 - 1500 - 1800 -
2K - 2250 - 2500 - 2700 - 3K -
3300 - 3500 - 3900 - 4K - 4500 -
4700 - 5K - 5600 - 6K - 6800 -7K
8K - 8200 - 10K - 13K - 15K -18K
20K - 22K - 25K - 30K - 33K -40K
47K - 50K - 56K - 60K - 68K -70K
75K - 82K - 90K - 100K - 120K -
150K - 180K - 220K - 250K - 270K
330K - 350K - 400K - 470K - 500K
560K - 750K - 1 - 1.5 - 1.8 - 2
2.2 - 3 - 4 - 5 - 6 - 10 - 15
megs. CAT. 19-2. Each.....05

1 WATT CARBON RESISTORS. 5¢

Best quality. Many offer them at several times these prices. Please order only ones listed:
100 - 200 - 250 - 400 - 500 - 1K
1500 - 2K - 2500 - 3K - 5K - 10K
20K - 27K - 30K - 50K - 75K -
100K - 250K - 500K - 750K - 1mg-
2 - 3 - 5 - 10mg. 19-3. 1 w...05

2 WATT CARBON RESISTORS. 10¢

Good for bleeders, series filament strings, etc. Never offered at these prices by others:
100 - 200 - 270 - 350 - 400 -
500 - 1K - 1500 - 1750 - 1800 -
2K - 2500 - 3K - 3300 - 4K - 5K-
7K - 8K - 10K - 15K - 22500 -
25K - 35K - 40K - 50K - 70K -
75K - 100K - 250K - 400K - 500K
750K - 900K - 1mg - 1½ - 2 - 3 -
4 - 5 - 6 - 10mg. The usual net is 24¢ each. 19-4. 2 watt.....10

CARBON RESISTOR COLOR CODE.

Color	Fig.	Multiplier	Tol.
Black	0	1	
Brown	1	10	
Red	2	100	
Orange	3	1000	
Yellow	4	10,000	
Green	5	100,000	
Blue	6	1,000,000	
Violet	7	10,000,000	
Gray	8	100,000,000	
White	9	1,000,000,000	
Gold		0.1	5%
Silver		0.01	10%
No Color			20%

VITREOUS ENAMEL WIREWOUND RES.

5 WATT WIREWOUND RESISTORS. 30¢

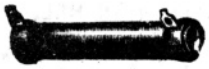
Standard make. Moisture proof. Triple insulated vitreous enamel coating. May be used instead of line cord resistances or other voltage dropping, bleeders, etc. 2% accurate, which is closer than most of them. Order in following sizes only:
10 - 25 - 50 - 100 - 200 - 250 -
500 - 750 - 1K - 1500 - 2K -
2500 - 5K - 10K - 15K - 20K.
19-5. 5 watt wirewounds .30

10 WATT WIREWOUND RESISTORS. 40¢

For heavier duty than 5 watter - make very good line cord resistances, bleeders, bias, etc. In the following sizes only:
5 - 10 - 25 - 50 - 100 - 250 -
500 - 800 - 1K - 1200 - 1500 -
2K - 2500 - 3K - 5K - 10K - 15K-
20K - 25K. 19-6. 10 w. wire .40

USED VITREOUS ENAMEL RESISTORS.

Various sizes. Test OK. Ohms:
500 - 1500 - 2M - 5M - 7500 -
50M. 19-23. Each.....15



50 OHM HEAVY DUTY.

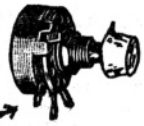
50 watts for heavy duty. Many uses. Heavy vitreous enamel. 6" long. List $1.35. 19-18. 4 oz.25

VOLTAGE DIVIDERS or Bleeders.

Vitreous enamel, wirewound. 50 watts. See CAT. N-1 V.D. 1st col. for use in output of power supply to balance the load. Adjustable slider tap gives variation for detector voltage, etc. In following resistances as the supply lasts:
100 - 2500 - 5K - 10K - 20K. Usually sell for twice the price.
19-9. Give ohms. 6 oz. wt. 1.05

USED WIREWOUNDS. 10¢

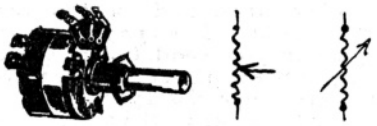
Various uses. Meter tested. You may substitute 2 watt carbons for any missing values. In the following sizes only:
1 - 2 - 3 - 4 - 5 - 6 - 10 - 30-
75 - 175 - 600 - 700 - 750 - 800
900 - 1K - 1100 - 1200 - 1500 -
1600 - 2100. 19-22. Used wire. 10



20 OHM RHEOSTAT or FADER.

Can control fil. voltage of 30, and other tubes. Also speaker control of voice coil. With knob. 25-40. List 65¢ .50

VOLUME & TONE CONTROLS.



With switch. Standard controls - all meter-tested by us. Following sizes are the most popular:
5K - 10K - 50K - 100K - 500K -
1mg - 2 - 3mg. 19-14. Size? .75

Less switch. Same as above but following sizes only: 1K - 2K -
5K - 10K - 50K - 100K - 500K -
1 meg. 19-15. Give size .50

NEW BASE-MOUNTING BRACKET.

This will fit the standard 1-hole mtg. for cond. & V.C. Its 5/8" wide x 1" at base x 1½" high. Upright has slot 3/8" x 3/4" long for adjustment. 13-9. .15

Volume Control Nuts. Fit the standard 3/8" VC shaft. Snug fit.
CAT. 13-7. 2 VC Nuts for.....05

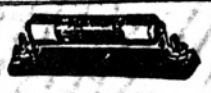
2½ OHM RHEOSTAT or POTENTIOMETER.

2½ Ohms at 1.4 v. & .1 Amp. will drop voltage .25 v. or down to 1.25 v. to tube filament. Use screwdriver adjustment. Mount on base or back. 25-48. 4 oz. .25

5/16" hole x #32 thread x 7/16 hex. nuts to fit above Carter rheostat. Hard to get this thread. 13-185. Two for .05

RHEOSTAT RESISTANCE WIRE. Fine for cutting fil. voltages. Sizes 2½, 10, 60 ohm. 19-20. Each .03

BALLAST RESISTANCES.

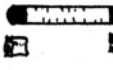


With mountings. Drops fil. and keeps steady. Res. 1-2-3-10-20 ohms. 25-4. Give size .10

LINE CORD RESISTANCES.

Reduces 110 v. fil. in series 4 AC-DC sets. If size unknown, send list of tubes. Fil. amps. must be the same in series. You may substitute 2 watt carbon or 5-10 w. wirewounds if desired.
Ohms 135 - 150 - 200 - 250 - 280
290 - 300 - 560. 25-5. Size? .55

CARTRIDGE GRID LEAKS.



Meter tested. Fit in clips below. Sizes 750-1K-15K 22K-60K-75K-80K-100K-125K-150K - 250K-500K-1mg. 25-30. Size? .05
Grid leak clips for above. Hold leak firmly. For other resistors - wrap pigtail around end and push in clips. 25-34. 2 for .04

MRL 2-A CRYSTAL IN USE 13 YEARS.

Ill., Chicago, A.W.S.: "I'm using my MRL #2-A - after 13 yrs. Also have made a few more of MRL sets. I enjoy reading everything you send. I don't know of any other place to get all this dope, especially on crystal sets. After all this time it would be like losing a friend to not hear from MRL."

MRL 1-TUBER GOES AFTER 6 YEARS.

Ala., Mobile, E.T.A.: "1-tubers have bitten me again. Got mine out, that I had built 6 yrs. ago - knocked off the dust - and she still goes. As you are my best source of info. - send me a new HB-4 for it."

LIKES MRL PUBLICATIONS.

Texas, Sinton, W.E.H.: "I don't have the words to express my Tks for sending me the Flyer. All of your publications are wonderful, and I read them 8-9 times."

A COMMUNICATION MAN REPORTS.

Alaska, Kodiak, J.P.T., KL7DG: "Ur work and patience in developing the art of Crystal sets has been appreciated. Ur HB-10 held my interest thruout a PM as I covered the 24 p. I've been in Radio since 1933, when I built my first Xtal set. 'Reliance Radio' is the name of my service agency which maintains marine and Aeronautical radio communication equipment on Kodiak Is. I shy away from the involved word of 'Electronics' - Radio is OK."

MRL STARTS HIM OFF IN HAM RADIO.

Calif., El Monte, J.M.F., WV6HHG: "Got the Flyer and RB&H. Just want to thank you for your help in getting me started in Amateur Radio. I have enjoyed building Xtal sets and MRL one-tuber. I passed the general ticket. Ur HBs and literature sure have helped. Keep up the good work. Rig here is 40-80 m. ARC-5 - Rec'r S40B. Ant. 40 m. dipole and long wire. Run 75 watts."

MRL BEATS LOCAL PRICES.

West Va., Weirton, M.P.: "I got a resistor locally for 22¢ that MRL charges 5¢ for. I've liked MRL ever since I answered an ad 2 yrs. ago- so do a lot of other guys around here. Hope you last a long time."

OTHER TUBES GOOD ON MRL 1-TUBER.

Mass., Cochituate, D.N.: "I own one of your 1-tubers you built. Set works fine for me. I take it on hikes and trips, using a 6 ft. long Aerial. While experimenting - I found these tubes to work good with the 1-tuber - 1A7, 1N5 3Q5, 6C5, 6K6 and 6W6."

MRL PLANS FOR RADIO FANS.

LIKES MRL LITERATURE.

Texas, Ballinger, C.W.S.: "Like your RB&H better than anything on the stands, and I buy most everything. Could not refrain from telling you how I like your literature. Keep it up."

LIKES RB&H.

N.Y., Scarsdale, B.S., "Comps. on RB&H 49, even better than 48. I refer to them quite often. Ur Chemistry and Natural History R so educational."

8000 MILES ON MRL 1-TUBER.

Ore., Portland, D.L.H.: "I get New Zealand (8000); Moscow (5600); Quito (4200) and many unidentified Foreigners, plus all over U.S. and Canada. It is really a wonder set. The vernier dial, I got from you, surely is the making of the set, as it splits those DX stations."

MRL HBs EASY TO READ.

N.Y., Brooklyn, T.C. Radio Svc. "Was surprised to find the MRL HBs so easy to learn. Seemed an instructor was standing by my side and all explained. Couldn't believe anyone could make Experimental Radio be so interesting and explained so clearly."

TECHNICIAN STARTED WITH MRL.

Ohio, Wooster, T.D.: "I am now studying Electronics at Valparaiso Tech. Inst. in Indiana and I owe my start to MRL. Am still operating the 1-tuber. The first station I received, when I went home in June, was HCJB, Quito, (3200). I substituted the 1Q5 for the 1C5 and get a little more volume. For several years I have been using 30 v. B. but now I agree 16 works best. I got #49 RB&H and liked article on regeneration. Congrats."

MRL QRM COIL and STEEL GALENA.

Colo., Loveland, D.M.: "Your Steel galena is the best I ever used. Your QRM Coil is worth much more than you ask because it works swell."

MRL 50-IN-1 TUNER (DP-61) WORKS

Calif., Montebello, K.E.C.: "I built your combination booster and wave trap gadget, and bro., it sure does its stuff. I can cut out that 10K-watter, 4 miles away. Am very proud of it. On your #2, I built, I got S.W. in San Francisco at 5 pm. and was very loud. It sure is a honey."

NOTE ON MRL D-ANTENNA COUPLER.

Calif., North Fork, H.H.: "I have been making experiments on your D-coupler. Use it all the time - do not ground the set. Have tried Ant. wires cut to specified lengths, but switch over to my 375 ft. one and the Coupler and get more signal and no more noise, even on 10 meter band. I tried the twisted lead-in but get more signal with 6" apart transmission line - about 20% more. I put a 400 ohm resistor between the condenser and coil, on each side. Use the Coupler - and you tune in the whole World." (ED. Plug-ins go inside the Coupler.)

MRL 2XM CELLULOID FORMS FOR DX.

Colo., Walsenburg, J.S.: "Your 2XM forms are sure good for my DX reception."

MRL PLUG-INS LAST OVER 10 YEARS.

Calif., Rancho Santa Fe, P.K.: "Your service has been very satisfactory. I am still using your fine Celluloid plug-in coils I bought over 10 years ago."

LIKES OUR PHONES and MRL 2-A.

Canada, N.S., Halifax, F.W.: "You weren't kidding when you said those Trimm phones were about the best on the market. I got a pair here for $3.00 and no pull on the magnets. You are the best I have dealt with- I always seem to get what I order. My 2-A is still working swell."

LIKES OUR STYLE OF BUSINESS.

Ill., Chicago, T.S.: "Having done business with you for some time - am satisfied with the way you do it. I recognize your outlet as 'tops in Xtal sets.' You may send CAT. to my friend."

CUSTOMER WORKS UP TO MISSILES.

Calif., San Jose, D.E.: "Dropped in to say that I started with MRL in 1948. Have worked up to a position in Lockhead Missile Labs." (Ed. Mr. E. sent in a 9000 mile report on MRL DP-29 1-tuber, in 1948.)

MRL 1-TUBER GETS DX ON TV AERIAL

Canada, Ont., Toronto, T.C.: "I hooked a 100 ft. Aerial onto my TV and 1-tuber. I got airports in Los Angeles (2500); and in Florida (1500) and Montreal. On TV Ant. I got Kansas (1100). Lots of other unidentified."

LIKES OUR HANDBOOKS.

Calif., San Diego, F.S.: "Have recently purchased 7 of your excellent Handbooks on Xtal sets. They are the best I've seen, and they are certainly worth more than you ask for them. Am very happy, and lucky that I answered your ad."

QRM COIL WORKS IN MONTANTA.

Mont., Hardin, J.Y.: "I have just received your QRM Coil and it sure does work up here."

THANKS, FELLOWS FOR FB REPORTS

Receiving Tubes Special-Purpose Tubes Sockets Accessories

RECEIVING TUBES

MRL tubes tested on our modern Hickock tester and guaranteed to work OK; Tubes well packed, with minimum postage. Following prices based on our cost and way below wholesale. Many hard-to-get numbers will not be re-stocked, so order NOW! Often direct substitute tubes may be used - so send us list of tubes you require.

Following hard-to-get tubes used in our 1-tuber (HB-4), and interchangeable. Priced at

1C5gt Det., amp., pentode. List price $5.30 - MRL 1.25

1Q5gt Det., amp., beam power amp. List $4.05. MRL 1.50

Following at $1.00, plus postage:

Type	Uses*	List
1A7gt	Pentagrid converter.	5.75
1B3gt	TV HV HW rectifier..	2.90
1C6g	Pentagrid converter.	4.00
1D8gt	2-det., triode amp..	4.80
1F6	2-dio., pentode.....	3.00
1H5gt	Dio., triode amp....	4.15
1J6g	2-trio. sim. to 19..	3.00
1LE3	Triode, amplifier...	6.40
1LN5	Pentode det., amp...	4.20
1N5gt	Pent. " " ...	5.20
1R5	Pentagrid converter.	2.70
1S4	Pent. det., amp.....	4.35
1S5	2-det., pent. amp...	2.65
1T4	Det., amp. sim. 1U4.	2.50
1U4	Det., amp. sim. 1T4	2.50
1v	HW rectifier.....	5.85
2A3	Power triode.....	10.50
2A5	Pentode power amp...	2.30
2A6	2-dio., triode amp..	3.65
2A7	Pentagrid converter.	3.65
2B7	2-dio., pentode amp.	3.40
3Q4	Pentode power amp...	3.55
3Q5gt	Beam power amp., det	5.65
3S4	Pent. pwr., det.....	2.65
3V4	Pent. pwr., det.....	2.50
5U4g	Full wave rectifier.	2.10
5W4gt	Full wave rectifier.	2.75
5Y4g	" " " .	2.45
5Z3	" " " .	3.30
6A6	2-power triode.....	3.00
6A7	Pentagrid converter.	8.50
6AF4	900 mc. triode.....	4.00
6AG5	Pent. det., amp.....	2.75
6AK5	400 mc. det., amp...	4.40
6AL5	TV 2-dio. detector..	1.85
6AM8	TV 2-det., amplifier	3.45
6AQ5gt	Beam pwr. amp., det.	2.15
6AT6	2-dio., trio., 2-det	1.90
6AT8	TV 40 mc. trio. con.	3.40
6AU4gt	TV dio. HW rectifier	3.60
6AU5gt	Beam power amplifier	4.30
6AU6	400 mc. det., amp...	2.10
6AV6	2-dio., trio. AVC...	1.55
6AW8	TV pentode triode...	3.70
6B5	Cpld. 2-trio. amp...	3.35
6B7g	2-dio. 2-det., amp..	3.70
6B8g	2-dio. 2-det., amp..	8.30
6BA6	HF det., amplifier..	2.00
6BA8	TV pentode trio. amp	3.85
6BC5	400 mc. det., amp...	2.55
6BE6	HF converter.....	2.20
6BJ6	HF det., amp. pent..	2.60
6BL7	TV 2-triode amp.....	4.15
6BQ6gt	Beam pwr. amp., det.	4.35
6BS8	TV HF 2-triodes.....	3.75
6BZ7	VHF 2-triode amp....	4.00
6C4	150 mc. trio. amp...	1.85
6C5gt	Trio. det.. amp.....	3.15
6C6	Pent. det., amp.....	4.80
6CB6	TV 40.mc. det., amp.	2.25
6CD6g	TV 45 mc. amp.....	5.80
6CM7	TV 2-trio. amp.....	3.20
6D6	Pent. det., amp.....	4.35
6F8g	2-trio. det., amp...	5.60
6G6g	Pent. pwr. sim. 1C5.	4.50
6H5	Electric eye.....	3.50
6H6gt	2-dio. det.. amp....	3.55
6J5gt	Trio. amp. sim. 6C5.	2.70
6J6	600 mc. 2-triodes...	2.80
6K5gt	Triode det., amp....	2.65
6K7	Pent. det., amp.....	4.60
6Q7	2-det., AVC, triode.	3.95
6R7g	2-det., triode amp..	4.35
6R7gt	Same.....	4.35
6SD7gt	Pent. det., amp.....	3.35
6SG7	HF pent. det., amp..	4.20
6SJ7gt	Pent. det., amp.....	3.75
6SK7	Pent. det., amp.....	3.60
6SN7gt	2-trio. det., amp...	2.60
6SQ7gt	2-det., triode amp..	3.00
6T8	3-dio., trio. det...	3.40
6U7g	Conv., det., amp....	3.00
6U8	TV converter.....	3.30
6V6gt	Beam pwr. amp., det.	2.15
6W4gt	TV HW rect., diode..	2.40
6X4	FW rect. cathode....	1.65
6X5gt	FW rect. sim. 6X4...	2.10
6X8	TV trio., pentode...	3.15
6Z4/84	FW rect.. cathode...	2.95
7A8	Octode converter....	4.70
7B7	Pent. det., amp.....	3.80
7E6	2-det., triode amp..	4.05
7N7	2-trio. sim. 6SN7...	3.55
12A7	HW rect., pwr. pent.	3.90
12AT7	TV 2-trio. converter	3.05
12AU7	2-trio. sim. 6SN7...	2.45
12AV6	2-det., triode.....	1.65
12BA6	HF det., amp. pent..	1.65
12BE6	Pentagrid converter.	1.75
12BF6	2-det., trio. amp...	2.20
12BH7	TV 2-triode amp.....	3.05
12SA7	Pentagrid converter.	3.95
12SK7	Det., amp. pentode..	3.60
12SL7gt	2-triodes, det. amp	3.75
12SQ7	2-det., triode amp..	3.30
12V6gt	Det., amp. sim. 6V6.	2.15
19	2-trio., det., amp..	3.70
24-A	Tetrode amp., det...	4.55
25L6gt	Beam power amplifier	2.35
25L6g	Beam power amplifier	2.35
25Z5	HW rect., doubler...	3.15
25Z6	HW rect., doubler...	2.90
26	Triode amplifier....	4.35
27	Triode det., amp....	4.35
30	Triode det., amp....	2.30
32	Tetrode det., amp...	3.70
33	Power pentode, det..	3.35
34	Pentode det., amp...	3.50
35/51	Tetrode det., amp...	2.40
35L6gt	Beam pwr. amp., det.	2.40
35W4	HW rect., cathode...	2.01
35Z5gt	HW rect., cathode...	1.85
36	Tetrode det., amp...	4.35
38	Power pentode.....	2.30
39/44	Pentode det., amp...	4.35
41	Pentode det., power	3.85
42	Pentode power amp...	3.85
43	Pentode power amp...	4.75
45	Power triode amp....	2.15
46	2-grid power amp....	4.65
47	Pent. power amp.....	9.15
50B5	Beam pwr. amp., det.	2.65
50C5	Beam pwr. amp., det.	2.15
50L6gt	Beam pwr. amp., det.	2.55
51/35	See 35-51	
53	2-triode pwr. amp...	2.75
56	Triode det., amp....	1.90
57	Pentode det., amp...	4.35
58	Pentode det., amp...	4.35
70L7gt	Rect., beam pwr.amp	10.15
71-A	Power triode, det...	5.10
75	2-dio-trio. det-amp.	5.10
76	Triode det., amp....	2.80
77	Pentode det., amp...	2.40
78	Pentode det., amp...	5.10
80	FW rectifier.....	2.90
81	HW rectifier.....	4.65
83	FW mercury rectifier	3.25
84/6Z4	See 6Z4.	
89	3-grid power amp....	4.35
482	Sparton det., amp...	3.00
485	Triode det., amp....	3.00
954	Acorn det., amp.....	9.80
957	Acorn det., amp.....	9.80
9002	Triode det., amp....	3.75
7H-4B	Amperite ballast....	3.00

*Amp. - Amplifier; Cpld - Direct coupled; Det. - Detector; 2-det. - 2nd det., AVC, amp.; Dio. - Diode; Dblr. - doubler; FW - full wave; HF - Hi-Freq.; HV - Hi-voltage; HW - half wave; Rect.- rectifier; Trio.- triode.

TRANSMITTING TUBES.

We have the following tubes in stock, from a special buy. All R guaranteed OK.

Type	Use	Market	MRL
TZ-20	C-amp. ph-cw	4.00	1.00
T-21	C-amp. ph-cw	4.00	1.00
HY-31Z	C-amp. ph-cw	5.50	2.00

BASE TUBE SOCKETS

Mount on top of chassis, or on wooden or Compo. base. Made of molded Bakelite. Good for quick experimental circuits.

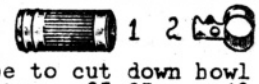
4 pr. UX Base. 25-43. 4 oz. .30
5 " UY " . 25-44. " .30
6 " " . 25-47. " .35

WAFER TUBE SOCKETS

Pins

4 UX Bakelite (1)..... 25-6.. .10
4 UX Steatite (2)..... 25-35. .15
5 UY Bakelite (1)..... 25-7. .10
5 Acorn Steatite (3).. 25-45. .40
6 Bakelite (1)..... 25-8. .10
7 Small, Bak. (1) #53. 25-9. .10
7 Miniature, Bak. (4). 25-13. .10
7 HF mica shielded 5.. 25-31. .25
8 Octal, Bak. (1)..... 25-11. .10
8 Loctal, Bak. (2).... 25-12. .10
9 Miniature, Bak. (4). 25-14. .10

TUBE SHIELDS.



(1) Fit over tube to cut down bowl and hum. Give type. 25-25. .10

GRID CLIPS (2)

Fit over tops of grid caps on large tubes. 25-23. 2 for.... .05
For small tubes. 25-24. (2). .05

Ballasts, grid leaks, line cord resistances, rheostats - Sec. R

Builders' Supplies—Wire—Tubing—Connectors—Terminal Strips—Lugs—Solder

HOOKUP WIRE.

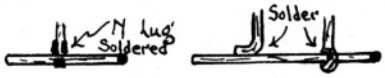
Pushback. Highest quality tinned wire, evenly drawn and very flexible. Easy to solder, especially with English Tri-sol. Has double cotton covering, with a paraffined damp-proof braid that slips back to solder. Following colors used as our standard when possible. This hookup wire works good with automatic wire strippers. Any length sold.

#18 Solid. Yellow. For heavy fil. leads, RF tuning circuits and Hi-F. **26-1. 20 feet.....30**
#20 Solid. Black. For general wiring, fil. etc. **26-2. 20'...20**
#22 Solid. Brown. General use in a small space. **26-3. 20'...20**
#18 Stranded. Blue. 16 strands #30 tinned. Heavy fil. leads, RF circuits, etc. where flexibility is desired. **26-4. 20 feet.....30**
#20 Stranded. Green. 10 strands #30 tinned. General wiring along with flexibility. **26-5. 20'...20**
#22 Stranded. Red. 7 strands #30 tinned. General wiring in a small space. **26-6. 20 feet....20**

THERMOPLASTIC WIRE FOR POINTS.

#22 stranded plastic-covered. Ideal for sw. pts. to coils. Is easy to skin. Tins easily. Makes a neat job. **26-29. 20 ft.....30**

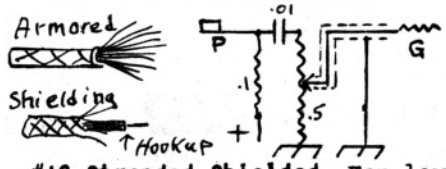
BARE TINNED COPPER BUSBAR.



All solid. Easy to handle. Is best for RF tuning circuits as connecting variable condensers, fixed crystals, etc. No insulation to push back. Solders easily with English Tri-Sol. Any length sold. Add postage.

#10	Round (only)	26-7.	20 ft.	1.00
#12	"	26-8.	"	.60
#14	"	26-9.	"	.50
#16	"	26-34.	"	.40
#18	"	26-28.	"	.30
#20	"	26-35.	"	.20
#22	"	26-36.	"	.20
#24	"	26-37.	"	.15

#16 ARMORED & SHIELDING.



#16 Stranded Shielded. For low freq. wiring of filaments, Xmtr, and auto wiring. Armor protects circuit from weather, wear, etc. About 15 turns of larger tinned wire covered by live rubber insulation and then a cotton wrap. Over this a tinned flexible armored shield that easily peels off. Diagram shows use in audio vol. control to cut down howls, etc. **CAT. 2-6. Per foot.....05**

Shielding. Woven for 3/16 inch hole to fit over most hookup wires. Easy to solder onto. By grounding it, you reduce feedback and regeneration. Diagram shows use of Armored, or shielding to reduce audio howls in an amplifier. **26-10. Per foot .05**

#14 & #16 Housewire. Good for heavy wiring around bench, Xmtr, lights, etc. See G-1.

Zip and Lamp Cord. About the same use as well as flexible 110 v. cords, etc. See G-1.

SPAGHETTI & SLEEVING.

Standard varnished tubing. About 4000 v. test. Use around busbar or over hookup wire for additional insulation.

#14 Sleeving. Soft. Takes up to #14 busbar. **26-23. Foot .02**

Black Spaghetti. New. For #14 wire or smaller. **26-22 Ft. .05**

3/16" hole Spaghetti. Heavy & smooth for bunched leads and the batt. cables. **26-26. Foot .05**

3/16" hole Spaghetti 2½" long. Same as above. **26-32. 6 pcs. .05**

7/16" hole Spaghetti. Heavier. Takes large cable. **26-27. Ft. .10**

Spaghetti Bundles. About 23 assorted sizes and colors 8" in length. **26-30. 6 oz. wt. .40**

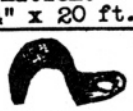
Empire Cloth & Fish Paper. OK for under sockets, etc. See N-1.

TAPE.

Friction Tape. Standard for Radio, Electrical and Home repairs. Split it lengthwise for best results.
3/4" x 14 ft. **11-14. 3 oz. .15**
3/4" x 60 ft. **11-16. 10 " .50**

Rubber Tape. Wraps close around the joint. May be covered with friction tape.
3/4" x 23 ft. **11-17. 10 oz..30**

Plastic Tape. For Electrical wiring. Hugs the joint and replaces friction & rubber tape combination.
1/4" x 20 ft. **11-54. 4 oz. .75**



CABLE CLAMPS.

Holds bunched wires, 110 cords or cables in place. Screw holes.
26-14. 3/16" to 1/4" cable. .03

For larger cable, and some with insulation.
26-15. 3/8-½" cable .05

TERMINAL STRIPS

2-Terminal Binding Post strips see **Section F.**

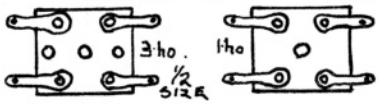
5-Terminal BP strip as shown, with 5 screw connections. May be used on 1-tuber. **4-29. 2 oz. .20**

4-Terminal BP strip. 3½" long. Same as above, except 4 screws. **4-3. 4-terminal BP strip. .15**

TIE POINTS & BLOCKS.

Lug terminals riveted to 1/16" Bak. strips. Mount under base to hold condensers, resistors, etc. Prevents shorts- makes neat job.

1 lug.	4-13.	.03	4 lug.	4-16.	.05
2 "	4-14.	.04	5 "	4-17.	.05
3 "	4-15.	.04	6 "	4-18.	.06



Mounting blocks are held below base by center screw & nuts. Same use as tie points.
4 lugs; 3 holes. **4-19. Each .05**
4 " ; 1 " . **4-20. " .05**

BINDING POSTS.

See Section F.

SOLDERING LUGS.

Tinned copper. Solders easily. Fit #4 screw F-K; #6 B-E-G-I-P; #8 D-M; ¼" A; Busbar joints N; Crimp R. No less than 20 of any type sold; no assortments. Please specify type. **20 in a pkg .15**
Sherman 3/16" hole. 3 for .05

Eyelets and Eyelet soldering lugs - see Section H.

SOLDER & PASTE.

Dubois Trisol Solder. Made in England from Spanish Lead and Malay Tin. Melts at about 358 F. making a quick strong joint. 60:40 ratio. **26-17. 3 feet .10**
Some 50:50 left, same price.

Soldering Paste. Helps keep an iron tinned. Also helps general soldering. We furnish the best brands, like we use, as Kester, Nokorode, etc. **26-19. Can .20**