Radio Builder & Hobbyist

FOR THE EXPERIMENTER

No. 38

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"The Fuller the Day, the Fuller the Heart." - Dr. Geo. G. Merrill.

CONTENTS.

EDITORIAL NOISE LEVEL.

Yep - here it is, another **RB&H** in your mailbox. Had it about ready to go, but several things turned up, as they usually do. U will notice that this issue is all photographed. This costs us about $20 more per issue, but it may pay in the end. At least, it is a lot less work in making it up. We can now insert a lot of original drawings, etc. that may save time. Plastic plates, that we have been using, often lose their copy after running awhile. If present photo'd plates go bad we can make one from our negative in 15 minutes. If you like the present setup better, maybe we can have more subscriptions?? Our Litho. suppliers have furnished us with some new plate gum that we hope will make the copies better. Lithography is like Radio - there is always a new wrinkle. We hope to cook up an article soon that will show our present machine, processes, etc. altho it is a trade alone.

By this time you have probably received copy of our latest **CAT**-alog (July 1954). If not, see page 9 of this **RB&H**. The present 34 page **CAT**. covers almost everything we handle. Previous pages 1-10 finally became a disgrace, and we had to take time to revamp them. A new sheet, or revision, now and then will be made, but the worst job is over. Your subscription to **RB&H** will keep you informed. A thousand copies of the **CAT**. means 34,000 times thru the machine; stacking; stapling; wrapping; mailing. Most of it fell on Mabel, who, before she got thru the list, threatened to move to Mexico City.

We are working on another New Deal, to be announced in next issue of **RB&H**. You won't want to miss it.

"Popular Electronics" - a new mag. sponsored by Radio TV News, 366 Madison Av., New York 17, is to be off presses in September. It will deal with experimental projects, Xtal sets, Diodes, Ham Radio, Transistors, remote controls, etc. Don't know what happened to "Young Mechanic" as our check for advertising a year ago was never cashed. I had correspondence with Oliver Read, Editor of Radio TV News, a couple of years ago. We both agreed there was a big need for a Beginner's mag. It may have had something to do with the present idea - we hope! Anyway, watch for "Popular Electronics" on the newstands for 25¢.

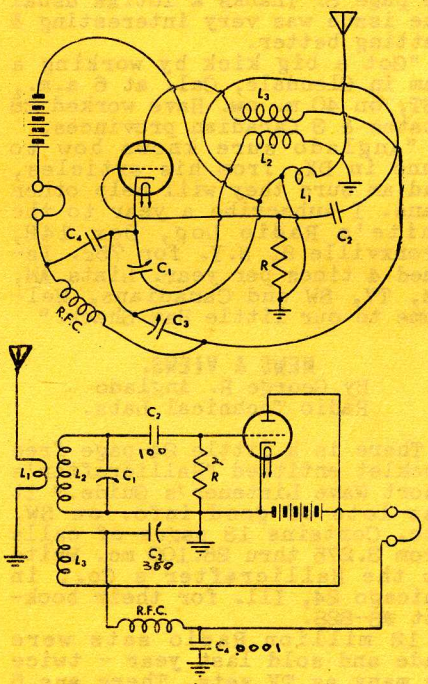
Business has been a little below normal this summer, altho we have surely gotten our share, if orders are any index. Now that cooler nights are coming up we can get ready for DX. Get your Aerial and ground system in good condition while the weather is still good. Check the guy wires, insulation, joints, and see that no limbs touch the wires. If the wire is corroded, replace it. U can find all the parts in the MRL **CAT**.

If you got any special reports or hookups the fellows would be anxious to hear about, just send them in to MRL.

"RB&H Short Wave Mailbag" will start in next issue. Will be conducted by Geo. Anglado, 719 Dorries, Biloxi, Miss., who has already written a lot of data for us. Will be similar to one by Boord, in Radio TV News. If you fellows have any data on foreign stations, shoot them to George.

Until next issue - Happy DX.

WHY USE SCHEMATIC DIAGRAMS?



Which cir. do you prefer? They are the same, but how much simpler to follow the second. It resembles our **DP-29** circuit, but uses MRL Type B Coils (see **CAT**.)

However, I suppose both cir. could rightly be called Schematics. The Electrical industry began, from the start, to use a neat form of Schematic. You will soon find they are very easy to learn and memorize.

Schematics resemble Chemical formulae, mathematics, and other means of quickly transferring thoughts to paper. E.G., an efficient type of shorthand that's characteristic to each Science.

So, be sure to draw them neatly, and you'll be well rewarded.

COMPETITION ON OUR 1-TUBERS (DP-29) GREATLY UNDER-ESTIMATED.

In "RB & H" #37, on page 4, you'll remember the report on David Kurtz and Gene Herrmann, of Terrace Park, Ohio. They got 6th and 7th places in a nation-wide "Boy's Life" DX Contest and each won a $100 Hallicrafter's Set for a prize. Both used 1-tube sets built from our DP-29 Detail Prints.

While we considered this tops in performance - by competing nationwide, we have had a very encouraging letter from Tom Ordon, whose likeness you saw on page 3. He writes us:

"OK on the 2 MRL Fans winning prizes in "Boy's Life" mag. contest with DP-29 1-tubers. It surely is a boost for simple receivers. Two friends of mine were in the same contest, but used an S-36B and a table model BC and SW set. I heard a few Ham operators say they had to quit because their sons wanted to borrow their **BIG RECEIVERS** for this contest. So, you can imagine the kind of competition the one-tubers were up against!

"Surprised to see my picture on page 3. Thanks a lot. As usual the issue was very interesting & getting better.

"Got a big kick by working a Ham in Glendale, Cal. at 6 a.m., EST, on 40 m. cw. Have worked 28 states & 3 Canadian provinces.

"Anglado sure knows how to tune in DX, from his articles, and am sure they will help other Fans. I subscribe a year to the White's Radio Log, Box 142, Bronxville 8, N.Y. for 75¢. Issued 4 times per year. Lists AM, FM, TV, SW and Canadians. Welcome to our little Ham Shack."

NEWS & VIEWS.

By George R. Anglado
Radio Technical Labs.

There is a little 24-page free booklet entitled "Hallicrafter's Short Wave Listener's Guide." It has lots of good info. on SW, etc. Contains 13 pages of calls from 3.275 thru 26.100 mc. Write to the Hallicrafter's Co., in Chicago 24, Ill. for their booklet #S-828.

12 million Radio sets were made and sold last year - twice as many as TV sets. There are 5 times as many Radios in use as TV. Most of the Radios were purchased where TV saturation is highest. Kitchens and bedrooms are using more. They expect to sell 2 million portables this year. About 2 out of 3 autos (28 million) have Radios. Since TV has arrived the number of Radio Xmtg stations has trebled. There are more than 8 Radio stations to every TV transmitter.

On every Radio set made by the Zenith Co., you will find two words that will live up to their meaning - "Long Distance." The biggest seller they have is the new latest Super "Trans-oceanic" portable. The founder of the Co. was Eugene F. McDonald, Jr. The Co. got its name in an odd way. Two men, Karl Hassel and R.H.G. Mathews were owners of an Amateur station 9ZN. In a local garage they put together a little receiver which McDonald heard by chance when he went to get his car. McDonald had a sudden intuition of the great future of Rdo and proposed partnership. When the Co. was organized, the Ham station's call 9ZN became Zenith- today a giant of the Radio industry. The deaf are grateful to McDonald for making a hearing aid for a low price. He had lost hearing in one ear, but had to pay $200 for an aid, plus all the cost of batteries, etc. He found costs were very low and got to working on one to sell for $40.

Seems like Transistors are the talk of the Country. Sylvania & Raytheon have come up with some good ideas. Silicon, which is being used in new types, is said to permit assembly of much more stable units than current types. They also withstand more heat.

The next time you read an ad selling "bargains" in tubes, capacitors, electro. cond. and so on - read the letter written by my good friend Amorose, in the Feb., 1954, issue of "Radio Electronics." It may save you a lot of money and cussing (if you do cuss!) In an assortment you will get a few standard ones and the balance are junk you never can use. An answer to the letter appears in June "RE." page 18.

CRYSTALS, TRANSISTORS & NOTES.

By Robert D. Mickelson, Chicago. Assoc. Audio Engineering Society

Received a nice letter from my old friend Les Hulet, who says you two are about the only Old timers left in the biz - and I agree with him.

Have not given up Xtal experimenting by a long shot. Les has been supplying me with some old time circuits. Just out of curiosity I bought a pound of Galena from a Scientific supply house here. In my opinion the Galena is very hot. I compare most of my Xtals with Germanium 1N60 and 1N48, which are readily available at work. This Galena compared as well. Maybe out in the Country for DX it may not be as sensitive - maybe more so. Of course, holding a spot is another thing. I sent Les a sample and he picked up NY stations good with it. I may try the corner of Galena, as suggested by your Mr. Darneal of Stanford University.

Les Hulet tells me the Iron pyrites from Colorado isn't very good. Either he got a bad lot or you got some good stuff.

Some of my Xtal stands, coils, etc. were in need of bases. I solved the problem by getting some California (plug) Redwood 1x6, from the lumber yard. It is soft enough to work, but will withstand hard usage. Some waxed stain was used, but left a dull finish. However, I added some Ox Blood shoe polish (hi) which did the trick. Now they look like old time Lab. equipment as used in the schools.

The Neon Lamp gadget (RB-34, p 3) finally gave out, after 18 months of continual service. It flashed about every second. I figured in 400 days it flashed 34,560,000 times. I also have an old Army surplus unit with but a single Neon lamp and (2) 67½ v. Batteries in series, and it has been running around a year. They are almost as cheap to run as a Xtal set - after the initial cost. Am happy to hear the old Flasher got over to a Science Class in Ceylon.

Joe Amorose had an article on a Ferri Loopstick Xtal set. I built it, and it really works. Selectivity is like your #2 Xtal set, and is loud. We have an old 5" magnetic speaker and with the Loopstick set can hear it all over the room. I use a Diode on the Loopstick rig. Would leave it on, but it keeps me awake!

Your "Crystal Detector" Handbook arrived, and want to compliment you on your good job. Real interesting and informative.

The #2 Crystal Receiver I ordered from you a couple of years ago is still in A-1 condition. Am forced to use a desk lamp for Aerial, as Landlord forbids any Aerials (The Stinker). Also snag onto a downspout that helps.

I'd really like to see a Xtal Club get started. Would be a good way to tabulate the thousands of Xtal Experimenters. Altho laughed at by many - it really is a very serious hobby, and indulged in by many people that could afford a more expensive one. A small membership fee could be charged. And what more for an official publication than RB?

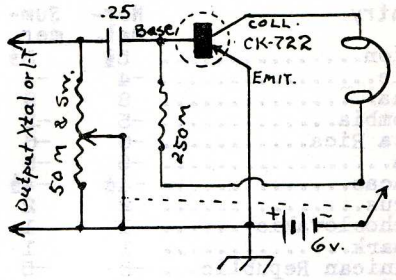
Believe it or not - but after about 3 years I decided to build your HB-4 set, as per your specs. Only thing, I used an Aluminum base, but same otherwise.

As I'm still plagued with desk lamp Aerial, I did pick up W4, 5 and 9 Hams, and one in Butler, N.C. besides lots of BC stations.

I read with interest the article by Dr. Grace on Transistor. Having borrowed a couple of CK-722's from the Lab. at work, I had quite a lot of fun working with them. Tried the old Lemon battery with a Zinc and Copper penny for the electrodes and it worked one of the Transistors, & generated ½ volt. Any acid would have been OK, but I just happened to have the lemon! Then took 2 Copper cents and a Zinc one sandwiched between 2 pieces of blotting paper, saturated with Lemon juice and got .9 volts and worked both Transistors OK.

Then I Transistorized the #2 Xtal and the HB-4 set, and every thing else in the line of one-tubers. Here is the circuit used.

It is the grounded emitter type using 6 volts of "B" battery. Transistors are rather strange to get used to as you cannot compare them with tubes. This particular circuit has medium input impedance and fairly



hi-output impedance, in the vicinity of 100M ohms. I coupled the output of the receiver, or crystal set directly to the base of the CK-722 thru a .25 mfd. coupling condenser, and the gain was excellent - even tho the impedances weren't matched. A funny thing is that the output impedance is reflected back to the input and vice versa. The Transistors are very temperature sensitive- just holding one unit in your hand, while in operation makes the gain take a dive and distortion set in.

Gain on the HB-4 1-tuber is normally OK, but with the added stage of Transistor amplification, the gain is excellent. In fact, I picked up WWV on 5 mc. & the note was constant - and got to be objectionable. With the $2 Crystal set I could really enjoy listening to it - plenty of gain and more locals than usual. I find your Iron pyrites and the Steel galena crystals to be excellent, and they were "hot" all over with the extra stage. The nice thing about Transistors is the low "B" voltage of 6 volts; no filaments and compactness. They are non-microphonic.

I'd like to try them on a Pocket Radio. They are down to about $4.50, but still too high. They'll eventually revolutionize many phases of the Electronic industry. The Mfrs. should really go into Pocket Radio Mfg. but possibly more sets would be dumped out the back door than thru the shipping dept. due to many bugs in them.

Am working for Sentinel Radio Corp., Evanston, Ill. north of Chicago. We are hot after color TV. I've built up most of the sets we have in operation now. We are currently using RCA circuitry with exception of the Sweep and Convergence circuits. It's the hottest thing on the fire now. We've got the whole Lab., electrical and mechanical, on it now, altho the firm is behind in research and production schedules. At first sets will be pretty expensive, but will come down, as the black and white TV.

This TV is "for the birds" tho - modern miracle or no - it's a home wrecker. The TV has to be on every night- whether the program is good or lousy. From one program to another until midnite - or till everyone falls asleep. Give up reading, going out, Rdo, stamps, everything - just squint at TV. I get just as much fun laying in bed listening to the Xtal set. I can't get the pleasure out of my head that I'm getting something for nothing - listening to the Xtal set.

Just came back from the plant a few hours ago, watching the Tournament of Roses from Pasadena. We had our first color TV sets going and it was really beautiful to see. Of course, we have many bugs in the system but it takes time to iron them out. We worked hard to get these sets ready for the parade, altho we had completed bench sets prior to the console models of today.

I ran across some old Karas Orthochromatic Variable condensers the other day, with micrometer dials 1000:1 ratio, about 4" in diameter. I bought a dozen for my own use. Data on the stuff showed 1924 as being time of its manufacture. They surpass anything of today in workmanship along this line. Also some Karas audio trans. with 4:1 ratio with a real HF response to 4000 cps. At first glance you'd think the things were small motors.

For my money your editorials are never boring - the personal touch about things that go on around MRL. It's a pleasure to find firms like yours, as letters and papers from the big boys are completely out of touch with us.

"What's in the Mags" is the handiest thing. I never get to read half the mags. I get, and looking thru this section helps me find articles I missed. Also like your new CAT.

I could rave on for hours about **RB & H**, Xtal sets, etc. Isn't it amazing how out of the years of crystal set inactivity (by big outfits) the offspring of them has cropped into what may be one of the biggest things in Radio - the Transistor?

A PRIZE WINNING WIRELESS STATION

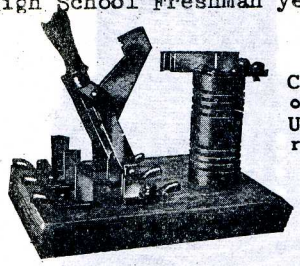
By Jim Kirk, W6DEG, W6JKX.
Electronic Organ Builder,
1552 Church St., San Francisco.

In 1910, if my memory serves me correctly, I won a contest offered by an up-to-the-minute Wireless magazine, on a description and photograph of a home-built Wireless station. I have always been a gambler, and when I gamble, I like to plunge. I stood to either win $2 or lose $3. To a boy, in 1910, that wasn't hay! To explain, the prize was $5, and I paid a commercial photographer $3 to come over to the house and make perfect photographs of the station (so as to stack the cards in the test).

Since some of you boys may want to duplicate the apparatus, I'll give a description. There's no reason why it wouldn't work today, to put out and intercept Wireless signals. Unfortunately, the transmitter is slightly illegal today.

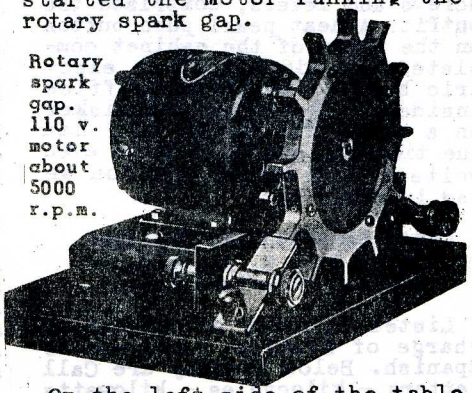
It starts with the Antenna. I put up as high a pole as I could - in fact, I put up 3 poles. The first two blew down in the sleet storms they have back East. A neighbor's chicken coop got in the way of one when it came down and that man seemed to lose all interest in Wireless from that time on! More of him, later. I put in as much wire in the Antenna as I could. Frequency? Well what is that? We lived on a hill and "that crazy Kirk kid's folly" could be seen for a long way off. Any fool knows one can't send intelligence without the use of connecting wires, but the crazy Kirk Kid seems to think he can do it.

In my bedroom, on the second floor, was my station. Then, as now, I built all of the apparatus myself. We tried to make it look neat, as well as to work well. The table, holding the apparatus was a genuine, hand-rubbed library table, built by the writer in Manual Training class in High School Freshman year.



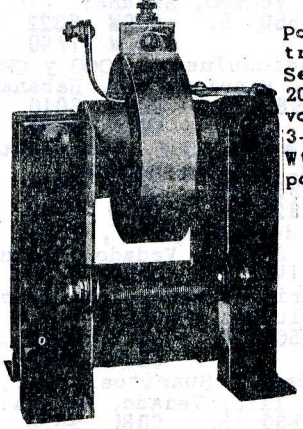
Change-over sw. Up to receive.

In the middle of the table was the large impressive change-over switch. The base came from a grave stone maker's yard, and it was beautiful marble. It changed the Aerial and ground from sending to receiving. When you slammed it down, a middle knife sw. started the motor running the rotary spark gap.



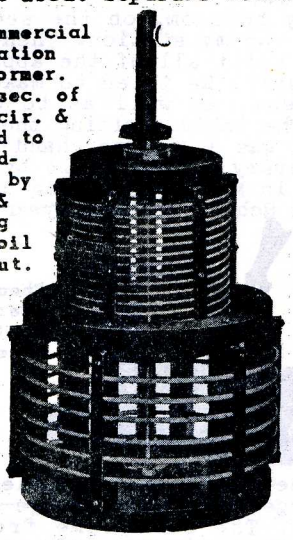
Rotary spark gap. 110 v. motor about 5000 r.p.m.

On the left side of the table was a wooden, stained and polished by hand, cabinet containing the transmitting apparatus. A home wound hi-voltage trans. was supplied from AC, thru a home-



Power trans. Sec. of 20,000 volts. 3-14 amps. Wt. 46 pounds.

made Electrolytic interrupter. I could write an article on this last item. When I pressed the key, the lights dimmed. So did the aforementioned neighbor's lights. After a month of this he presented a bill for electricity to my mother. He could just see his electricity being sucked over to my house. Seeing is believing, and I couldn't explain to him about separate meters.



Old commercial oscillation transformer. Tuned sec. of spark cir. & coupled to Ant. Adjusted by clips & sliding Ant. coil in & out.

A companion cabinet contained the receiving apparatus. A loose coupler, home-made, a home-made tuning condenser and crystal detector, with a flock of springs, screws and levers, comprised the outfit. A neat pearl push-button on the front of the cabinet completed the circuit of an electric buzzer, which was muffled inside. It kept the catwhisker on a sensitive spot. If I had the time and space, I could even write a book about the fun we had in those days.

CUBAN BROADCASTING STATIONS.

By Geo. R. Anglado,
Radio Technical Labs.

Listed in order of Company in charge of Station. Language is Spanish. Below Company are Call letters - kilocycles - kilowatts

Cadena Oriental de Radio E. Palma 658, Santiago de Cuba:
CMCI 1260 5. COKG 8955 1.2
Cadena Roja, O. 157 E/23 y Humbold, Vedado, Habana:
CMW 550 5. COCW 6322 1.
COCW 21740 1.
Cia. Radiodufusora COCO y CMCK, S.A., Manrique 166, Habana:
CMCK 980 5. COCO 6010 5.
COCO 9535 5.
Circuito CMQ, S.A. Radiocentro, M.312, Vedado, Habana:
CMQ 630 25. COCQ 9670 5.
COCQ 8825 5. COCQ 9740 5.
La Voz del Aire, S.A., Hotel Palace, 25 Y G, Vedado, Habana:
CMCD 140 10. COCD 6130 1.
Ministerio de Educacion, Avenida de Columbia, Habana:
CMZ 1560 5. COX7 4290 5.
COX4 9640 5.
Radio Cadena Suaritos, S.A., 23 y No. 1113, Vedado, Habana:
CMBL 860 15. COBL 9833 1.
Radio Habana Cuba (Cadena Azul). P. de Marti 53, Habana:
CMCY 590 25. COCY 6450 1.
COCY 21620 1.
Radio Internacional, S.A., P. de Marti 107, Habana:
COCH 9437 5.
Radio Onda Musical Cubana, Juan Bruno Zayas 403, Altos, Habana
CMCQ 1420 .25 COBQ 9235 1.
COBQ 9540 1.
Radio Progreso, S.A., San Jose 104, Habana:
CMBC 690 50. COBC 9362 1.
COBC 17850 1.
Radio Solar, S. Rafael 108, Hab.
CWBZ 830 5. COBZ 9030 1.
COBZ 17820 1.
Talleres Tipograficos, Nacionales, Habana:
COCX 9273 1.
Voz del Camaguyana, Independencia 308, Camaguyana:
CMJC 1270 1. COJK 8663 1.

Note: In the S.E. CWBZ, CMQ & CMCY can be heard in the daytime if Radio loop, or Antenna coil is replaced with a Loopstick Antenna. Wind 3 to 5 turns #24 or #22 Enamel wire on bottom end of coil, next to Sec. winding. Adjust core to bring station in clearly.
More calls next issue.

TIME IN ALL COUNTRIES.

By Geo. R. Anglado.
Radio Technical Labs.

The following list shows the differences between the local times and Greenwich Mean Time (GMT - London). It is necessary to allow for your difference, or to set a clock at GMT for your DX sessions. Numbers show hours they are ahead of GMT; (-) shows number of hours behind GMT.

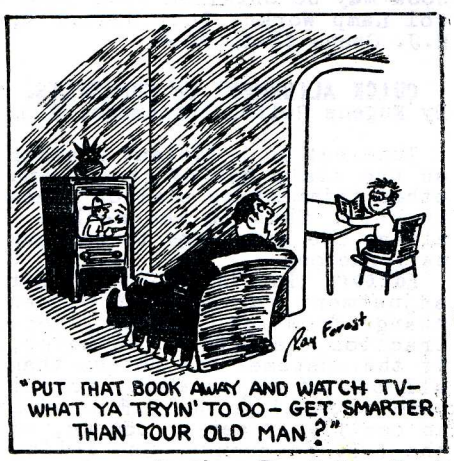
Country	Normal.	Summer.
Aden	3	3
Afghanistan	4½	4½
Albania	1	1
Algeria	GMT	GMT
Andorra	1	1
Angola	1	1
Arabia	3	3
Argentina	-3	-3
Australia, NSW, Qnsld Tas., Bris., Melb., Sydney, Victoria	10	10
So. Australia	9½	9½
W. Australia, Perth	8	8
Austria	1	1
Azores	-2	-2
Barbados	-4	-4
Balearic Islands	1	1
Belgian Congo, West	1	1
" , East	2	2
Belgium	1	1
Bermuda	-4	-3
Bolivia	-4	-4
Brazil, Eastern	-3	-2
" , Western	-4	-3
Bulgaria	2	2
Burma	6½	6½
Cameroons	1	1
Canada, Atlantic, N.S.	-4	-3
", Eastern, Ont	-5	-4
", Central, Man	-6	-5
", Mountain, Alta	-7	-6
", Pacific, B.C.	-8	-7
", Newfoundland	-3½	-2½
Canary Islands	GMT	GMT
Cape Verde Islands	-2	-2
Ceylon	5½	5½
Chile	-4	-4
China	8	9
Colombia	-5	-5
Costa Rica	-6	-6
Cuba	-5	-5
Curacao	-4½	-4½
Cyprus	2	2
Czechoslovakia	1	1
Denmark	1	1
Dominican Republic	-5	-5
Ecuador	-5	-5
Egypt	2	2
Eire (Ireland)	GMT	1
El Salvador	-6	-6
Ethiopia	3	3
Fiji Islands	12	12
Finland	2	2
France	1	1
Fr. Eq. Af., Brazzav	1	1
Fr. W. Af. Senegal	GMT	GMT
Germany	1	1
Gibraltar	1	1
Gold Coast	GMT	½
Great Britain	GMT	1
Greece	2	2
Greenland	-3	-3
Goa, Portugese India	5½	5½
Guadeloupe	-4	-4
Guatemala	-6	-6
Guiana, British	-3¾	-3¾
Guinea, Portugese	GMT	GMT
" , Spanish	½	½
Haiti	-5	-5
Hawaiian Islands	-10	-10
Holland	1	1
Honduras	-6	-6
" , British	-6	-5
Hong Kong	8	9
Hungary	1	1
Iceland	-1	GMT
India	5½	5½
Indonesia, N. Sumatra	6½	6½
" , south	7	7
" , Java, Borneo	7½	7½
" , Celebes	8	8
" , Molucca Isl	8½	8½
Iran (Persia)	3½	3½
Iraq (Messopotamia)	3	3
Israel (Palestine)	2	3
Italy	1	1
Jamaica	-5	-5
Japan	9	9
Kenya	3	3
Korea	9	10
Lebanon	2	2
Liberia	-1	-1
Libya, Tripolitania	1	2
" , E. Cyrenaica	2	2
Luxembourg	1	1
Macao	8	9
Madagascar	3	3
Madeira	-1	GMT
Malaya	7½	7½
Malta	1	1
Martinique	-4	-4
Mauritius	4	4
Mexico	-6	-6
Monaco	1	1
Morocco, French	GMT	GMT
" , Spanish	1	1
Mozambique	2	2
Nepal	5½	5½
New Caledonia	11	11
New Guinea, Dutch	9½	9½
" " , British	10	10
" Zealand	12	12
Nicaragua	-6	-6
Nigeria	1	1
Norway	1	1
Pakistan, West	4½	4½
" , East	6	6
Panama	-5	-5
Paraguay	-4	-4
Peru	-5	-5

Country	Normal.	Summer.
Philippine Islands	8	8
Poland	1	1
Portugal	GMT	1
Puerto Rico	-4	-4
Reunion	4	4
Rhodesia, N. & S.	2	2
Romania	2	2
Russia	3	3
Samoan Islands	-11	-11
St. Thomas	GMT	1
Saudi Arabia	3	3
Sierra Leone	GMT	½
Somaliland	3	3
Spain	1	1
Sudan	2	2
Surinam	3½	3½
Sweden	1	1
Switzerland	1	1
Syria	2	2
Taiwan	8	9
Tanganyika	3	3
Tangier	GMT	1
Tahiti	-10	-10
Tasmania	10	10
Thailand (Siam)	7	7
Transjordania	2	2
Trieste	1	1
Trinidad	-4	-4
Tunisia	1	1
Turkey	2	2
Union of South Africa	2	2
U.S.A., Eastern	-5	-4
" , Central	-6	-5
" , Mountain	-7	-6
" , Pacific	-8	-7
Uruguay	-3	-3
Vatican	1	1
Venezuela	-4½	-4½
Vietnam	8	8
Yemen	3	3
Yugoslavia	1	1

WEST COAST LAND-SHIP STATIONS FOR THE BRASS POUNDER.

W.E.B., St. Helens, Oregon, writes: "EO - just a note in reply to your card. You mentioned Ocean Falls, B.C., and we used to be there every 24 days to load newsprint. Now we also make 3 Alaskan ports, so hit Ocean Falls every 45 days southbound from Alaska. The Canadian Ops R all good and the stations easy to work, except when they get tied up on point-to-point TFC at certain hours. The Alaskan coast stations have one good Op and several beginners in each station. If you go over 15 wpm, they say "QRX" and go get the Chief. He is generally a good Op.

"Coast and Ship stations have been changing over to new bands for the past 2 years or so. I/F freqs. (Coast Stns) shifted last year and I am including the new West Coast freqs. just in case U hadn't seen the new line-up. H/F stations still changing around. Poor Coast station Ops will have to tune 3 or 4 receivers continuously on HF and still guard the 500 KC ship calling and SOS.



"PUT THAT BOOK AWAY AND WATCH TV— WHAT YA TRYIN' TO DO— GET SMARTER THAN YOUR OLD MAN?"

American Boy & Open Road.

Call	Kc	Co.	Location
KSE	418	RMCA	Los Angeles
VAI	420	Canada	Vancouver, B.C.
VAF	430	"	Alert Bay, B.C.
VAK	430	"	Victoria, B.C.
KTK	436	Globe	San Francisco.
NMW	440	USCG	Westport, Wash.
ALE	452	ACS	Ketchikan, Als.
VAE	456	Canada	EStevan, B.C.
KPH	460	RMCA	San Francisco.
KOK	464	Mackay	Los Angeles.
NMJ	466	USCG	Ketchikan, Als.
NMQ	472	"	Long Beach, Cal.
KFS	476	Mackay	San Francisco.
VAG	478	Canada	Bull Harbor, BC
NMC	486	USCG	San Francisco.
KLB	488	Mackay	Seattle, Wash.

"Well, OT, that's about it. An MRL #10 Xtal set I built this spring for one of the Ship's Engineers, works FB. He lives in the hills of N. Calif. for several months each year and with no power. Hi."

Editor: Good old Ocean Falls. Used to get in there quite often in the 20's. You come up a long inlet that ends in a good sized bay. Around the back of the town are high mts. and generally snow clad - looks a lot like Port Angeles, Wash. or Salt Lake City. Almost everyone works in the big paper and pulp mill. A beautiful setting for a town.

VAE, Estevan, Vancouver Island, used to be one of the best carrying stations. Out of San Pedro we could play VAE any night on a fixed Perikon Ship set, with the phones hanging on the set. Nine of the stations were in operation 30 years ago.

Alert Bay used to be the free love colony - no marriages or divorces. Hi.

Our paper sez Coast Guard is also on 2670 KC.

Used to make Ketchikan, Vancouver, etc. quite often, while on the Standard tankers.

You should hit most of these stations on the top of our Lo-F Band coil, or at the bottom of our Long Waver.

SOME ELECTRIC LIGHT NOTES.

The brightest light manufactured has a candle power of over 3 billion. It consists of a 4" long quartz tube filled with Krypton gas. It is so bright it will penetrate 1000 ft. thru a dense fog. (Ah! Just what we can use in San Francisco!)

The number of Electrons that pass thru a 60 watt bulb in one minute equals the number of the drops of water that flow over Niagara Falls in 100 years.

Light bulbs and fixtures used on our fighting ships are made of plastic glass and Aluminum. They stand up under the most severe shocks.

Lights burn out because the fine Tungsten wire keeps getting thinner. Some of the Tungsten is vaporized. The black cloudy look comes from the vaporized Tungsten that condenses in the form of black powder on the glass.

You may want to use one or more light globes in series with filaments on AC-DC sets, or for other uses. Several may be added up in series. Following is a resistance table:

W.	Ohms	W.	Ohms	W.	O.
10 -	180	40 -	23	150 -	6
15 -	100	60 -	18	200 -	4
25 -	50	100 -	9	300 -	3

SOME INTERESTING REPORTS.

By Tod Wakefield, Highland, Cal.

Had a Diode go pot - so took it apart and used a catwhisker. Result - no loss of Diode or no loss in efficiency.

Using a tube between Aerial & set. I just hook to different prongs and get lots of selectivity. (**Ed.** Effect is same as a condenser between grid, plate & filament).

Just did the impossible, even for our big set. Using the bucking coil idea with a condenser (**HB-17, p. 22**) between Aerial & set. I bring them in without any interference. On the 1-tuber (**HB 4**) and the MRL Hi-F Broadcast coil, it works fine in separating the peanut stations. Also it increases volume 50%. (**Ed.** Due to tuning of Aerial to same wave as the secondary).

With MRL QRM Coil I cut down KITO, 4 blocks away, and get Los Angeles stations all day. I have (4) 70 foot Aerials. (**Ed.** Don't you apartment house dwellers get jealous?)

SOME INTERESTING RADIO NOTES.

Underwriter's Labs. say it may cost more to test a lightning arrester than to replace it. Very high voltages are necessary to shatter it. If one is cracked or broken it should be replaced. Because most all lightning jumps across the internal air gaps, there is little danger of harm to your Radio set. An Aerial is an asset in thunder storms, as it allows the static to leak off gradually, instead of being built to cause a strike. This strike resembles a condenser discharge.

The electric eye was invented over 50 years ago, but the inventor didn't know what to do with it!

If you have a singing guy wire that annoys you - wrap a piece of felt 6" to 12" long, half way up the guy wire. Secure ends of felt with plastic tape.

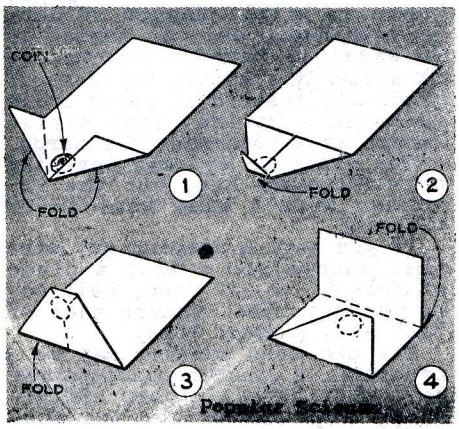
The old horn speaker may be a treasure. A speaker manufacturer says they have a higher efficiency, less distortion and much

smoother response than the cone speakers. We know that on Xtal sets the horn is the best. The old Edison sunflower type will reproduce almost as well as a pair of phones.

A Short wave message can be sent around the World on less power than is required to operate the average size flashlight.

Motorola has a means of plating joints instead of soldering them. No details.

A Radar transmitter loafs most of the time. It may produce one million watts of power for one microsecond and loaf for 200 microseconds. The average continuous power runs about 500 watts.

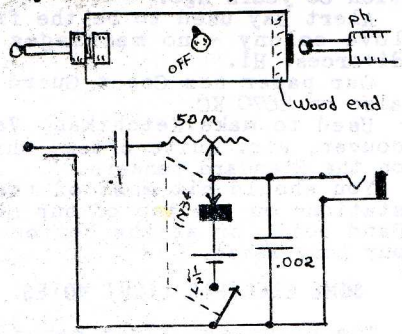


A QUICK WAY TO SEND COINS.

A sheet of heavy paper may be folded to send coins thru the mails. The idea is not new. We prefer coins stuck to a light carboard with cellophane tape. For your protection, a money-order is preferred.

HEADPHONE NOISE FILTER.

By Fred Dillion, Hollywood.



Parts List:

1	midget phone plug...	17-47.	.40
1	single phone jack...	17-31.	.30
1	50,000 v.c. & sw....	19-14.	.75
1	1N34 diode.....	9-37.	1.25
1	.002 mica condenser.	8-22.	.20
1	sm. bk. point, knob.	10-9.	.20
1	used IF Coil shield.		.10
	(plug jack end with a wooden block is OK)		
1	.1 x 600 v. Bypass	8-44.	.15
	Hardware, etc.		

I have looked high and low for a good headphone noise filter, or limiter, and finally came up with this one. The circuit is self-explanatory. It should be built into a metal can, as an old I.F. can. The input is fastened onto a phone plug, or may be wired right into the set. On the other end of the can the phone jack may be mounted. Adjust the pot. for best reception. The pen cell battery will last a year or more, if you turn it off when not in use. It may be easier to wire up parts & assemble inside the can. —A good tube diagram book may be obtained from Tungsol Lamp Works, Inc. Newark 4, N.J. Opens flat. Free.

QUICK ALIGNMENT OF SUPERHETS.

By Eugene Rolle, Brinsmade, N.D.

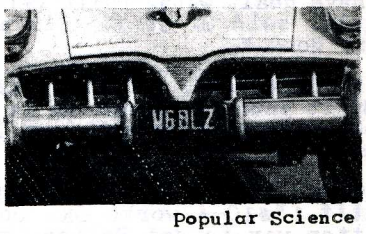
Tune set to a distant station on the dial. Set IF trans. and other trimmers so station comes in best. This is the method I always use and seems to be very satisfactory.

Editor: This is OK for a finer adjustment, as circuit values change from age, leakage, contraction & expansion. However, if the customer has gotten them all out of adjustment, you'll have to re-align the I.F's. with an oscillator set at 456 kc, or the I.F. frequency. One fellow brought his set back, saying: "U

are a good mechanic, but a little careless. You left all those screws loose, and I tightened them all up. Now it doesn't play at all. What did you do?"

LOOK FOR HAM OP. LICENSE PLATES.

Probably by this time most of U have spotted Amateur License plates, as per the above. Hams



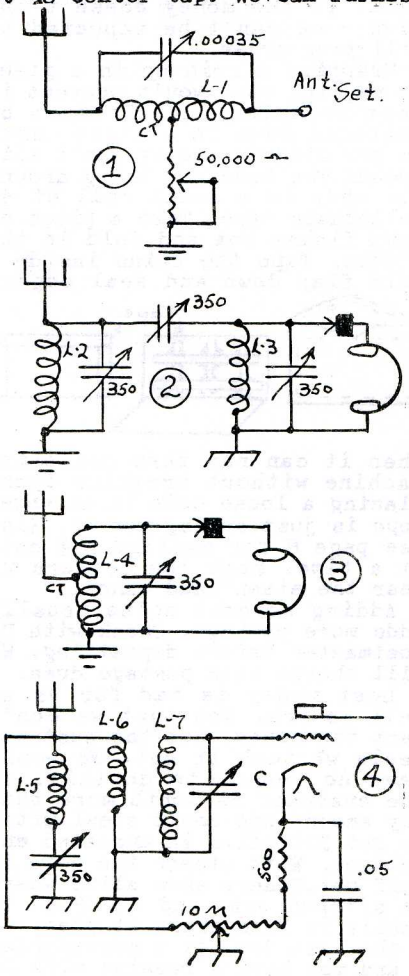
Popular Science

have gotten them Oked in some 25 states. It makes it easier for C-D officers to spot Amateurs to be used in emergency communication work.

A good hobby would be to identify any you see. Get an Amateur Call Book from us **($3.50)** to get his QRA. Drop him a card, and won't he be surprised?

A BALANCED WAVE TRAP.

Mr. H. Sutton, of St. Helena, Calif. sends us a little idea on a split wave trap. L-1 can be about 90 turns of #22 DCC, tapped at 45 center-tap. We can furnish



this coil for $1.00, wound on celluloid 2XM form. The 50,000 ohm volume control is 75¢. Without the variable resistance it is an impedance type wave-trap, and will block out most unwanted stations.

We expect added selectivity when the volume control is regulated toward ground. The resistor and half the coil are in parallel to the primary, but the other half of the coil is in series. Apparently the Ant-ground input impedance is balanced to the input impedance of the tuning circuit.

In the circuit **(2)** we have a tuned Aerial-ground circuit that balances up with the circuit of L-3. L-2 and L-3 are the same as L-1, less the center tap. We can furnish them for $1 each. Varying the coupling condenser, between the tank circuits, controls the selectivity.

In circuit **(3)** we have the secondary tapped for the Aerial. The nearer the tap to the ground - the more selective the circuit and the weaker the station. L-4 coil is the same as L-1. Tapping this coil every 5 or 10 turns will add to its efficiency.

In circuit **(4)** we have a combination of tuning & trap ideas as used on some midget sets. The coil L-5 is about 150 turns #28 DCC on a 2XM celluloid form. We can supply L-5 for about $1.50. This is more or less a parallel booster. The 10M volume control balances the cathode voltage with the Aerial input. When more resistance is added to the side toward the Aerial, and less resistance is added to the Cathode circuit - more volume results, with a lessening in selectivity.

Here are some good ideas to try out. We'd like to hear from some of you fellows as to your findings.

We always admire a man who is willing to help others - even at a great cost to himself. And, a fellow who keeps busy - not sitting around waiting for the end of the Rainbow. One of the busiest men we know is Rev. Douglas W.J.Noble, 1233 Marin Ave., San Pablo 10, Calif. He is the owner of the Wayside Chapel, shown above. If interested in tracts, etc. write him. Oh, yes, he has one of our 1-tubers and manages to find a little time, now and then, to work with Radio.

New buyer: "It took me 6 weeks to paint our house."
Lucy: "What a waste of time - why didn't you photograph it?"

DX REPORTS.

MRL 1-Tube DC SW Receiver.
See K-3, A-4, E-2 (coils)

Wm. Lucero, Los Angeles: "Your 1-tuber is swell. The farthest I have gotten on it is Niagara Falls, New York (2200 miles)."

Leonard Cutress, Welland, Ont. Canada: "Crystal Detector Handbook received, and think it is great. Learned a lot from it. My HB-4 1-tuber has been doing fine - best DX was VLBG, Melbourne, Australia **(10,200 miles)**. 20 m. coil brings in Italy **(6200)**, London **(5000)** and other foreign. 40 m. coil gets WWV; BBC **(5000)**; Sweden **(6500)**; Italy **(6200)** and 40 m. Amateurs all over. 80 m. brings in lots of stuff. On BC I got Needles, Cal. (2050 miles at 250 watts); Ogden (1750) and a lot of other good ones. I have built a lot of sets but this one beats them all. I use a 130' Ant. about 30' high of a large 4-wire flat top. Assembled set in a box with 7' Police car Ant. and work it in Country. Also works fine on a bicycle and on a truck."

E.D.Tressler, Oxford, Nebr.: "The little 'whopper' is still at it! Got Australia **(8790)** **ten mornings in a row.** Tunes at 70 on 20 meter coil. Australia comes in on 31.2 meg. Today a man came from 60 miles away and listened to my 1-tuber receive "This is Tokyo" **(8200)**. He is going to have a lot of fun with his."

Thomas Erney, Sandusky, Ohio: "Am having good results on the 1 tuber with just 20' of old wire, spliced in several places. Due to lack of space it runs 45 deg. and is 14' high at far end. But, I got Perth, Australia **(11,750)** at 9:30 a.m. Also Barquisimeto, Venezuela **(2335)** on 80 m.; London **(7041)** on 40 m.; CHOL (855); KRCA (1947); KCBR (1963); KVOZ (1337); KOLK (1299). Makes 35 stations received; 23 on Short waves. The B battery and (2) A's lasted 4 mo. which I think is good."

Terry Drushel, Wooster, Ohio: "Built your 1-tuber and got very good results. I get 19 BC stations, one of which is Ft. Worth (1000). On SW I have received 14 identified stations, including Moscow **(6800)**; Prague **(6300)**; London **(5500)**; Madrid **(4800)**; Ecuador **(2440)**. This is the best 1-tube set on the market at any price, and you can print this."

Jack Skubick, Sharon, Pa.: "Ur 1-tuber is a honey, and it even beats a 4-tube all-wave receiver that I use. Some of my best are Japan **(6000)**; London **(5000)** comes in every day, so it doesn't count; San Francisco (2500) and 20 BC stations, and all bands. This set can't be beat. Ur Handbooks are worth many times the 30¢ charged. I get all 20 BC stations every night."

Jimmy Livingood, Chattanooga, Tenn.: "3 mo. ago I bought a 1-tube DC kit from you and wired it up. Am very pleased with it. Have played Australia (9500): Prague (7100); Brazzaville(6650) Berne (6200); London (5800); Ecuador (2400). Want to say Switzerland did not fade. Melbourne faded some - I heard the laughing jackass. Logged it 1:45 a.m. About 25 voice Hams and hundreds of code stations. You have done a good job on this kit."

MRL #2 DX CRYSTAL SET.
See A-2, K-1, DP-22 (D-1).

Manuel M. CASTRO, K6AMB, San Francisco: "The #2, I bought from you is just perfect. All of our BC comes in sharp, and no ground necessary. Police, Hams, planes, etc. Often a small Ant. is used. Am bothered with KRON TV interference on my National NC-125 (net $200) but can listen on #2 without this QRM."

Leslie Phillips, Campbellcroft Ont., Canada: "Built your #2 and receive stations up to 1200 mile radius. Altho we pay duty from the U.S., we still can buy parts from you cheaper."

Errol A. Heath, New Gloucester Maine: "Have experimented with Xtal sets for 4 years, and found nothing better than your #2. The first night I got stations that we never heard before, even on our tube set! Have tried other circuits of yours, and they are much better than magazine cir. I want to compliment you on your service; prices reasonable and your packing saves us money. My best DX is Cincinnati (900); Wheeling (750); KDKA (700)."

P.J. Kavaleski, Franklin Mine, Mich.: "I hooked HOXA, 15.1 meg., 7500 watts Panama (3600) on your #2, a month ago, and have a picture postcard from them verifying it. I put a 3-30 mmfd. trimmer in series with Aerial & set and it helps cut out stations & aids SW. On your dial scales I get a small bottle of clear finger nail polish at the 5 & 10, & cover the whole scale with it. It packs a nice polish, when dry - and looks as good, or better than celluloid. The polish is also used to stick it to panel. U may use any of this you wish. Over to you and out, PJK."

Thos. Dickinson, Lyme, N.Hamp. "On your #2 and 2-A I get about 1000 miles every night. I think your coils are great for DX. I built DP-29 and your DP-31 sets, with good results."

Edward Dumas, Shelby, N.Car.: "Very much pleased with your #2. Have received Berne (4900); London (4400); Montreal (800); Waco (850) and many Amateurs and other foreign stations."

Elmer Burton, Wellston, Ohio.: Still get Moscow (7200) and London (5400) on #2 Xtal. Get them very plain. Get London more often, but sometimes CHOL (1400) cuts in on them. Get London on 1st tap on left and dial on 84. Aerial was a ¼" steel rod 4 ft. long and 30' of wire wrapped around a wooden frame. Get BBC about 6 p.m."

F.H. Stutzenberger, Charleston, S.Car.: "Very pleased with #2 you sent me a few mo. ago. Have received New Orleans (600) and many other stations. All received on a 30 ft. inside aerial."

MRL #2-A DX CRYSTAL SET.
See A-2, K-1, DP-22-A (D-1).

Don. F. Fitch, Kingston, N.S. Canada: "Six mo. ago I built your 2-A set. Have received dozens of stations, including Washington (700); Baltimore (650); NY (500) and other good ones."

Harry Keller, Canora, Sask., Canada: "Have received plenty of DX, including Denver (875), and all over USA on Broadcast."

Kenneth Jones, Milner, Ga.: "I have been getting signals from Germany (6300) and Spain (4800) on the 2-A Xtal. Have received them for over a week. Also receive same thing on 1-tuber. My Carborundum works good on DX."

Gene Monday, Mt. Ayer, Iowa: "I have built your 2-A and find it very satisfactory. Have received Del Rio (1000), police, Canadians, and many others."

Joseph Gorman, Bound Brook, N.J.: "On your 2-A Xtal I received 30 diff. DX stations in 1½ yrs. My best DX is London (4800) that I got 4 times. Best US DX is WHO Iowa (1000). Get Hams, etc."

Jerome Macha, Baytown, Texas: "First nite I tried the 2-A I was really surprised. Caught the following on SEL side of switch: Omaha (850); XERF (755); Juarez (700); Nashville (625); Monterrey (500); Laredo (425) and lots I could not identify. Could hear louder ones on speaker. Can separate all locals good on SEL side. Del Rio is mailing address for XERF; Clint, Tex. is same for XELO; Ft. Worth is mailing address for XEG."

Norman Crocker, Liberty, Tex.: "Recently I built a 2-A. I live in an area of unusually poor Rdo reception. But with this set I got Atlanta (875). I use three grounds. Set operates a loudspeaker with low volume. My Ant. is an old Telephone line 500 ft. long."

E. Novak, Milwaukee, Misc.: "I have a 2-A and a Pinole Special (DP-65). Between the two I can pick up to 1000 miles in many directions. Get a bang out of Ur writeups. Built crude Xtal sets years ago, but can now build 'em more or less scientifically with your plans."

MRL #10-A. SELECTIVE CRYSTAL SET.
See K-2, DP-34 (D-1).

Clifford Brown, Kingston, Ont. Canada: See RB-37, p. 9 for his report on getting Moscow, London and other good ones on 10-A.

Fraser Walters, Halifax, N.S., Canada: "You people are the best I have dealt with. Built (7) 2-A Xtals; sold 3. Ur 10-A is also very good."

W. Schersand, Alhambra, Cal.: "Built your #10-A and it is the most selective crystal set I ever heard."

Chas. Graham, Del Paso Heights Calif.: "#10-A works OK. Got a better way to get Police, etc. on it. Connect ground to Antenna post and Aerial to catwhisker of the Steel galena. Late at night I get plenty of Short waves. The best results during rains."

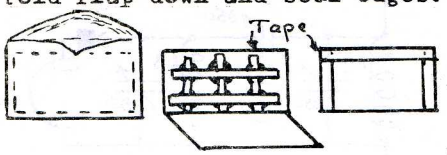
E.O. Wilson, Superior, Wyoming: "At night I get Oklahoma City (750). Use Aerial 50 ft. long & 20 ft. high."

ANNOUNCEMENTS.

NO MONEY ENCLOSED.

Seems we are always harping about the carelessness of many when sending coins thru the U.S. mail. If the money doesn't arrive - we can't be expected to fill your order.

Wrapping a coin up in a piece of napkin, etc. won't prevent it from breaking out. It must be fastened down to a light card, as per diagram, so it won't slip around. The handiest thing around the shop is a small roll of ½" Cellophane tape. Take a piece of corn flakes box and fold in the middle. Tape the coins inside & fold flap down and seal edges.



Then it can run thru canceling machine without breaking open. Placing a loose coin in an envelope is just asking for it. Also see page 6 for mailing ONE coin at a time. Mark the letters up near the stamp "hand cancel."

Adding several coins usually adds more postage. Check with Ur Postmaster before depositing. We will charge back postage dues.

Lost money is bad for us as well as you. Not that we don't want the money, but the customer feels we took it out. We would have no reason to do this, as the customer is worth more than any amount one could steal. Often we get $10 bills in unsealed envelopes. With others the coin is half out. Others show slits where it slipped out, and the P.O. is unable to find where it goes.

The best deal is a money/order - and you have a receipt with it

– and cost is 10¢ up to $5.

We accept gummed stamps – except Special delivery – in any denomination up to around 50¢ at full face value.

Above info. is good for buying from others as well as us. We have educated thousands in sending money thru the mails. And, albeit they have saved lots of money that might have been lost, otherwise.

New Magazines for Sale. All R sent postpaid at these prices & in good condition. Most are unobtainable elsewhere.

Science & Mechanics June, 1952; April, 1953, each..... .25
Popular Science Dec., 1953. .30
Mechanix Illustr. July, 1954 .30
Mechanics Today Jan., 1954. .30

1/4" square slider rods. In short pieces about 3" long. At a special price of, each..... .05

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

Forms & CEMENT. New prices on Xtal set forms & cements, as:

2XM 2" dia. x 4½".	7-40.		.30
P2XM " x 2".	7-39.	(2)	.30
Light Coil Cement.	7-57.	oz.	.20
Heavy " " .	7-58.	"	.20
Thinner for each.	7-59.	"	.20

We must continually search for steady prices. Each time mdse. goes up a little. Bottle suppliers are reluctant to furnish us with bottles under 25 gross lots – which would last us too long. Therefore, double prices to us.

Drum Dial. 1 left. 3½" drum works parallel to panel. Removable cell. scale 0–100. Cond. may work to left or right of the drum. Illuminated escutcheon plate on front of panel. Uses ¼" shaft. **CAT. 10-57. 1 lb. 1.00**

Double Fahnstock Clips. Temporarily out of stock. Substitute single clips with one common screw for both – same thing.

5/16" Brown Compo. Small pcs. only. **16-18. Sq. inch 1/3¢.**

Transformers. Some closeouts. Add postage to each.

Heavy duty Output Trans. for a 1C5 or 1Q5. **2 lbs. weight..** 1.50

2½ v. Heavy Duty Fil. Trans. with tapped pri. **2 lbs. wt.** 1.75

150 v. and 35 v. secondaries Power Trans. Cased. OK for experiments. **24-19-1. 4 lbs.** .50

THE MRL CATALOG.

The biggest part of our Catalog revision is completed. We don't say it is a perfect job – by a long shot. One can't be a good printer, Radio man, and a dozen other "experts" at the same time. However, in our own little method we have tried to include as much data as space permitted. It takes 3 days for Urs Truly to get the copy up for one page – and time is a premium in this Static Room. Some of you may remember the old American Sales Company of the early 30's, and how they used to include all kinds of circuits. But, contrarily, the successful ones of today include no circuits that may help – just something to get you to buy. Maybe we'd make more of the heavy lettuce, too, if we left them out. In our line of reasoning we feel that a fellow wants to know how and where to use a part, or he may not have a use for it. Could be our method is wrong – but we still like it this way.

Naturally, from time to time we will add, or revise some page but the job will be easier. The big houses "lift" sections of their old catalogs into the new. Otherwise, you'd never see them getting out catalogs so fast. Even the practice of more than one catalog per year seems to be going by the board.

If you didn't get your Catalog – there may be many reasons. We do plenty of checking here – but we can miss occasionally. Also, they may get lost enroute. So,— if you didn't receive an MRL Catalog, saying **"Revised July, 1954"** – just shoot us a 2¢ postcard. (Why, yes, – we'd like an order with it, of course!) If a friend would like one – OK, too.

WHAT'S IN THE MAGS.

Many fellows report they like this section, as it brings to attention material that has been skipped. Few of us have time to completely cover all the current literature. Due to lack of space we take the latest and go back. No mag. is listed unless it has material for the Small Set Fan.

Radio & TV News. August, 1954.

"Vacuum Tube Tesla Coils." 45. For the Fan who likes fireworks, and wants to keep some TVI down.

"Calibrated Inductances." 54. Lot of good data on Loopsticks.

Radio & TV News. July, 1954.

"From Catwhiskers to Color." 31 Read did a good job of recording history in this article. I can remember farther back than this. Yep, many $15 Crystal sets we built at Nadeau Radio, where we opened a store in 1924. Even included the cabinet. Hi. We used to order 10 201-A tubes at $5 each (less 40$) and only get 6 when the order arrived. The CR-5 regenerative was in vogue then, sometimes with 3 steps of audio! Really, all they needed were the hi-gain tubes of today and we could have played the World.

"Pioneer Amateur Station." 32. Oh, those memories! The interrupter, or "slop jar" is the one mentioned by Kirk, page 3 of RB. I built a loose-coupler like the one at bottom of p. 33. They are still one of the most efficient of tuners. In picture next to it – note bank of storage B-batts. down at right. In Fig. 5, they meant "Crystaloi" detector.

"Simple Geiger Counter." p. 35 For you Uranium seekers, this is a simple rig using 1S4 tube.

"Troubleshooting 3-way Portables." p. 36. Good data.

Radio & TV News. June, 1954.

"Photo Transistor." p. 52. As Germanium is light-sensitive the author uses lens to focus the light on Transistor. Output regulates the counter relay.

"Old Time Ops." p. 76. Used to work some of these old scows in Radio Op. days, as Oleum, Washtenaw, San Juan, Yosemite, etc. Believe the San Jose got wrecked off Lower Calif. Malarin was C/O after I left RCA.

Diode data pages 88–91.

Radio & TV New. May, 1954.

"Transistor Tester." p. 39. It puts signal from generator into Transistor and checks ratio of detection or amplification.

"Transistorized Light Beam." 52 Using Photo Transistor, modulated light source that is picked up on a Transistor receiver."

Radio Electronics. August, 1954.

"Junction Transistor Test." 30 A bridge method of checking the Transistor. Can be checked with phones or Scope. The null tone shows when in balance.

"Lo-noise Transistor Pre-Amp." p. 64. Using stage of Audio ahead of amplifier.

"Solar Batt. and Transistor Xmtr." p.76. Produces power from light. Shows 2-stage amplifier.

"Regenerative Transistor Receiver." p. 84, By our good Dr. Wm. H. Grace, customer of MRL. Sure looks like a simple and a very practical unit.

"IF & RF Transis. Oscillators." p. 87. Guess you fellows will have to start buying 'em. More Transistor data p. 38–86–94–118.

Radio Electronics. July, 1954.

"Transistors N to P." p. 77. An excellent article on theory we can all use. All of us will have to get doped up on these things, and this is a good place to start.

"Transistorized Geiger." p. 82 All we need is the Geiger tube & Transistor amplifier.

Do not let your Subscription to "RB&H" run out..

Continued on page 10

MRL CLASSIFIED ADS.

4¢ per word; 3 insertions same ad 8¢ per word. Count all words. Circulation over 3500 per issue, plus back/numbers, which continue to sell over a long period of time. Numerals (3-40) means 3 issues, ending with #40.

Don't let your ad run out. We won't notify you when it does. A 3-time ad always pulls better than a single ad. Always consider the Reader's point of view, not your own, when writing an ad. The more you tell; the more you sell, within reason.

I have 3 Radio books- 1 big diagram book, all new, will sell for half, if anybody wants them. Write B. Borgelin, 2134 West 29th Ave., Denver 11, Colorado. (3-38)

BARGAINS! Electrical and Radio Supplies. Write for free list. Charles Pilgrim, 538 South Washington, Dillon, Montana. (3/38)

FLORIDA - Help wanted - Real Estate, groves, farms, business apportunities. Classified ads mailed 25¢. Name City paper ads wanted. P.O.Box 753, Winter Park, Florida. (3-38)

EXTRA-LOUD Crystal, senitive catwhisker, latest Radio plans & catalog, circuit list 30¢. Amorose, Route Four, Richmond, Virginia. (3-39)

EXCHANGE Radio Parts and wire. Write Wilburn Clay, 1803 Childress Drive, Atlanta, Ga. (3-39)

PAEC-GUAR guaranteed Crystal, instructions, catalog. Only 15¢, Wesley Hamilton, Route #3 Box 878, Albany, Oregon. (3-39)

PEPPY-PAL One-tube circuit and photo 30 cents, Bruehl, 38 Oneida Street, Lynn, Mass. (3-40)

CRYSTAL Radio Experimenters. Write Leslie Hulet, Route 4. Lakewood, New Jersey. (3-40)

100 NAMES & addresses of Radio men & Experimenters from Foreign countries who want to exchange books, magazines, diagrams, parts, etc. 50¢. Radio Technical Labs., 719 Dorries, Biloxi, Miss. (1-38)

A COMPLETE 1952 Radio and Television Course, Questions and Answers, 11 Kit booklets. Cost $180; ask $30. Good shape. Joseph A. Foley, Duncans Mills California. (3-40)

RADIO Crystals, five different minerals, tested and card mounted $1. Bruehl, 38 Oneida Street, Lynn, Mass. (3-40)

MAKE Your Own Tape Recording Heads. Made, tested and proven here in our Labs. Easy instructions with drawings mailed anywhere in large Manila envelope. Nothing like it published anywhere. Send only $2 for complete set of plans, drawings and easy instructions. Radio Labs., 719 Dorries St., Biloxi, Miss. (1-38)

HORN Speaker, with unit. Strong, attractive, A-1. $5.85. Amorose Route Four, Richmond, Virginia (1-38)

NEW DEAL: Long distance Crystal 25¢, or three 50 cents. Address Jiffey, Abita Springs, La. (3-40)

MRL CORRESPONDENCE CLUB.

2¢ per word, per insertion. Count name, address and interests as words, the same as for ads. Numerals same as ads. Many good friendships have resulted from use of this column.

P. J. Kavaleski, Box 17, Franklin Mine, Michigan. Ham Radio; Crystal sets; Minerals; Swap Radio magazines; letters. (8-42)

Roy Koeppe, Route 2 Box 16, Tulare, Calif. 14 years old. Radio, Crystal set and "DX Hound." Swap parts, plans, letters, etc. (1-38)

TUBE BASES WANTED

See **CAT. E-2** about sending us 1-3/8" dia. tube bases. Because 4,5,6 pr. are hard to get, we are allowing 2¢ for 5's also. If more bases aren't received we'll have to require them with orders.

Above 2" display ad costs $3 per issue, or $1.50 per inch up and down. Three insertions same ad for price of two. Display ads pull better than classified.

You can make up your own ad. Rule off a space with black ink, same width as above and 1" or more deep. Cut out a line drawing from a mag. and glue on. Then type, or draw in black ink to suit yourself. Copy should be sharp and black; no colors. We photograph it on the plate.

RE gets $28.70 per inch (14 L) or $2.05 per line, of 5 words. The more circulation; the higher the ad. Our ads go to Experimenters and Dabblers, while other's are for general distribution.

What's in the Mags., cont.

"Selenium Regulators." p. 84. Instead of rectifiers, they use them in this article - for voltage regulators. There is a shortage now of Selenium.

"Card File." p. 90. Started a file like this years ago, but it got ahead of me. Too many mags. came out around 1930. Before the Rider's manuals came out it was necessary to have one. Remember how we used to dig for a half day to find some old circuit we had to have to repair a Radio. A very good idea, if you want something to do in spare time.

Transistor data p. 93-108.

Radio Electronics. June, 1954.

"Tube & Cap. Checkers." 66-67. Some checkers that might be interesting. However, we'll take the large checker mfr's word for it, instead.

"Grid Dip Oscillator." p. 68. Uses Electric eye tube. When the cond. hits the same freq. as the cir. under test, the eye works. Another grid dip on p. 111.

"New Transistors." p. 75. Lots of good data on new uses.

"Ceramic Capacitors." p. 78. A good discussion of characteristics of condensers. Many hints as to mfr., tolerances, working voltages, uses, formulae, etc.

Transistor data p. 96 & 98.

Radio Electronics. May, 1954.

"Transistor Phono Oscillator." p. 74. To be picked up by standard Radio. Also mike input. And an Audio Amplifier is shown.

"IF-RF Xtal Oscillator uses Transistor." p. 92. In this combination they work down to 1 mc.

Diode data p. 107; Transistor data 6-8-107-114.

Science & Mechanics. Aug., 1954.

Some Tesla coil data pages 14 and 18.

"Emergency Twin Xtal Set." 129 A new wrinkle with 2 Xtals. You don't have to use Diodes, but any Xtal is OK. Fixed Carborundums may be used with 1½ v.batt. in series. Selectivity depends on spacing of coils. Circuit L-2 is the Telefunken idea, we use in our #8 & #9 circuits. Tuning Ant. and Ground is most effective. Coil L-3 may be wound on a celluloid or Bak. form, instead of the basket weave, altho the electrical characteristics are very similar.

"Pocket Power Pack." p. 134. A simple pack, using Selenium rectifier (3-19. 1.10). Be careful and don't ground the chassis, or else check neon light between chassis and ground to see if the AC is plugged in right. We prefer our 2-fil. trans. deal, as **RB-30**, page 1. No need to worry about polarity there.

Science & Mechanics. June, 1954.

"Shortwave Adapter." p. 151. A good adapter layout. Our 1-tuber may be used the same way. The output goes into audio stage of midget Radio. Our Type A coils will be 100% better than the ones shown. Also, see that the Ant. trimmer is remote controlled, like our HB-4 set.

"Mite-Size Radio." p. 160. A Loopstick (see CAT.) deal, that gives you a power supply in the other half of the tube. The fil. runs at 115 volts. We can furnish most of the parts.