Monthly Newsletter

Of The

Ballarat Amateur Radio Group Inc. #6953T

Box 1261, Mail Centre, Ballarat, Victoria, 3356, Australia.

Next Meeting:

Thursday, 24th of April, 2014, 7.30 pm

Volume No: 37 **Issue 4** **April** **2014**

B.A.R.G Items for Loan.

Antenna Analyser MFJ269 HF-VHF-UHF
Antenna Analyser MFJ249 HF/VHF
UHF Antenna Analsyer
Antenna Analyser VHF. Autek.
Receiver Drake SSR-1.
Receiver FRG-7.
Transceiver TS-530.
Oscilloscope BWD 509.
Grid Dip Oscillator.
Safety Belt.
Antenna Gin Pole.

WHO SAID THAT BRATTINE, SHOCKLEY et al, invented the transistor post WWII.

Finally I have re-discovered the old magazine I have been looking for since about 1978.
Have a look at the top of the page reproduced here and note the date.
When I first found it I was reminded of the early 1940s when I discovered the magic of wireless as we called it.
As a 11 year old it kept me off the streets and occupied with basic technology trying with varying success to manufacture crystal sets for the broadcast bands (in UK) followed by valve sets.
My friend and I were mad keen and we tried all sorts of minerals as a detector device, ranging from carborundum to gold spattered black coal via the "Westector" from Westinghouse and other esoteric substances.
We finally went on to the usual Two volt heater valves of the period such as the HL2 and PM1HF if anybody remembers those.
We were well aware of the need for forward bias and the then popular technique of a second cats-whisker on the basic semi-conductor material although we did not use those terms. When you think about it we were making point-contact transistors without knowing, although with a marked lack of success.
It's funny to think that at a time when they were discovering the Tetrode and Pentode they had the transistors and solid state electronics within their grasp.

73 de VK3CAZ, Reg.

REPLIES (*continued*).

Crystal Amplifiers. Gramophone Pick-Ups.

CRYSTAL AMPLIFIERS.

(493—W. H. C., Leicester).—The reference to crystal amplifiers in my article (page 553, Sept. 6th issue) was given more or less in the interests of experimenters. The circuit requires considerable patience, and would be rather unsuitable in the hands of invalids.

The best results are possible with zincite, using a hardened steel cat's-whisker, which should not exceed No. 34 s.w.g. in thickness. The generating points on a crystal are fewer than the rectification points, and the crystal should be protected from vibration with rubber pads.

Further particulars of the circuit may be useful. It has been claimed that with the last circuit shown in my article, all the broadcasting stations in this country have been received, with a number of Continental stations besides.

The aerial condenser shown may be from 0.0005 to 0.001 mfd., and the other from 0.0002 to 0.0003, according to the capacity of the aerial. The results are claimed to be as good as an H.F. valve with crystal detector. The amplification will largely depend on the skill of the operator, and the circuit used, of which there are a good many. British experimenters recommend 8,000 ohms for 'phones, and foreigners have recommended low-resistance 'phones of various values. Certainly good results are possible with either in certain circumstances.

Low-frequency amplification does not seem to be as satisfactory as high-frequency amplification, therefore the H.F. circuit was given.

The detecting crystal should be the zincite copper pyrites, which is of high resistance. The resistance shown should be wound with copper wire on an iron core, and should be between 1,000 to 1,500 ohms. The potentiometer should be about 400 ohms. The zincite, if not sensitive enough, should be fused in an arc. Small flash-lamp batteries are suitable for supplying the voltage necessary for reception.

The crystal oscillates owing to excess of negative resistance. While current is flowing through the circuit and once a sensitive point has been found on the crystal, the battery circuit should not be broken, or the crystal will have to be reset. When receiving, therefore, a double-pole switch is used, as shown in the sketch. The double-pole switch A is closed and B left open. To switch off the current, the shunt E is switched in with B. A is then opened, and finally B. As an oscillating crystal is difficult to set, this is useful.

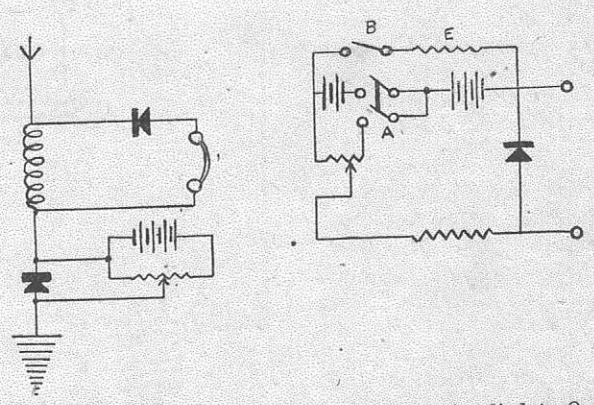
The potentiometer is used to adjust the voltage. A simple means of making a suitable potentiometer is to substitute thinner wire on a rheostat, putting on enough wire to give the 400 ohms required.

It should be understood that the crystal will not oscillate at any frequency at one setting of the potentiometer: the higher the wavelength the lower must be the potential applied.

The final diagram illustrates a simpler circuit, but it is not so sensitive as the more complicated circuit shown in the article of September 6th.

A French experimenter claims a 15 to 1 amplification with certain circuits. It is, however, often the case that the facilities possessed by the experimenter, and the perfection of results, are beyond the ordinary person's means. However, the man with the most elaborate outfit does not always get the best results, and thus many are encouraged to continue in their efforts towards successful issues.

W. H. GRAYLING.



Crystal Amplifier Reply.—(Left) Oscillating Crystal Applied to Ordinary Set. (Right) Switch Arrangement.

GRAMOPHONE PICK-UPS.

(143B).—I am afraid you have not yet grasped the principle on which these electric pick-ups work. It does not matter in the least which way the pick-up *appears* to face, as this outside casing has nothing to do with the internal arrangements.

As I have already explained, pick-ups are made so that when they are attached to the tone-arm or carrying-arm by means of the fitting provided on the pick-up, they are in such a position that the reed is free to move *sideways only*. In order to reproduce the *up-and-down* sound-waves engraved on Pathé records we must twist the pick-up so that what was formerly a side-to-side movement of the reed becomes an up-and-down one. In other words, we must turn the pick-up through one quarter of a circle, bringing that part of it which faced the side of the cabinet round to the front. Obviously you cannot expect the reed to respond to both the side-to-side waves on needle-cut records and the up-and-down waves on Pathé records. Clearly, when it is right for one it is wrong for the other, and as quite 90% of records now on the market are of the former type, all ordinary pick-ups are arranged to play these.

I am afraid you will find the fixing of the pick-up on the carrying arm so that it is in the right position for Pathé records a rather troublesome job. And, as I said, I am not at all sure that part of the pick-up casing will not foul the record when so arranged, and when the slant of the needle is correct. This is a matter for experiment.

If your pick-up arm is too short to allow your needle to come slightly in front of the turntable spindle, you should move the base of the arm nearer to the spindle. If this can only be effected by fixing the arm in a bracket at the side of the cabinet, I would certainly advise you to do this.

BERNARD TRACY.

PHONOVOX PLAYING PATHE RECORDS.

(482).—We have made a number of experiments with Pathé sound-box and records with a view to adapting the Phonovox for same.

It is not possible to get results in the way indicated by the reply above. We therefore tried making an adaptor to the needle-holder, but results, are not up to standard when using an ordinary record and pick-up. The chief troubles experienced were loss of high scale of frequencies, excessive noise from Phonovox due to extension of arm, and alteration to natural frequency of the armature.

It is evident that to obtain really satisfactory results from the Pathé records it would be necessary to entirely re-design the reproducer.

IGRANIC ELECTRIC CO., LTD.

BOOKS RECEIVED.

At Home Among the Atoms. By J. Kendall. (Bell.) 7s. 6d.

Model Sailing Boats. By E. W. Hobbs. (Cassell.) 6s.

Boot Repairing by Adhesive and Other Methods. By D. Laurence-Lord. (Cassell.) 1s. 6d.

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Vol.27, No.3; March 2014 www.siliconchip.com.au

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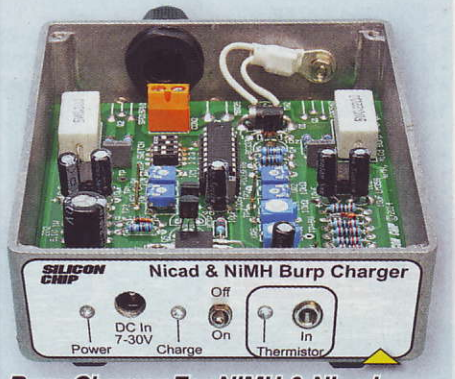

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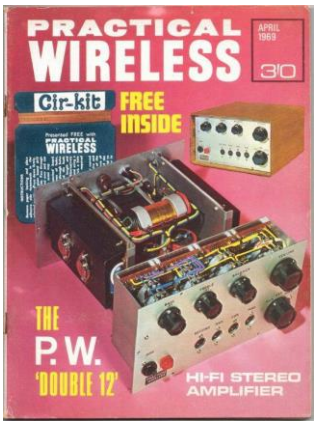
CRAIG, VK3KG



REVIEW WITH CRAIG, VK3KG

PW March 2014

73 VK3KG

George Fowler

Memorial Auction

BALLARAT AMATEUR RADIO GROUP INC.

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THE ANNUAL
BALLARAT AMATEUR RADIO AUCTION DAY

The "George Fowler Memorial Auction"

Will take place on Sunday 25th of May
At the clubrooms at The Ballarat Airport
GOOGLE COORDINATES LAT -37.516476 LONG 143.783936

There will be a Soup & Rolls for lunch
TEA and COFFEE available as usual

All supplied by BARG - lunch starting at midday…
Auction starting at 1pm.

<u>WANTED</u>

Pre-loved gear
Computer items
Software
Antennas ETC. ECT.

If you require more information:
Email: member.vk3kgl@barg.org.au

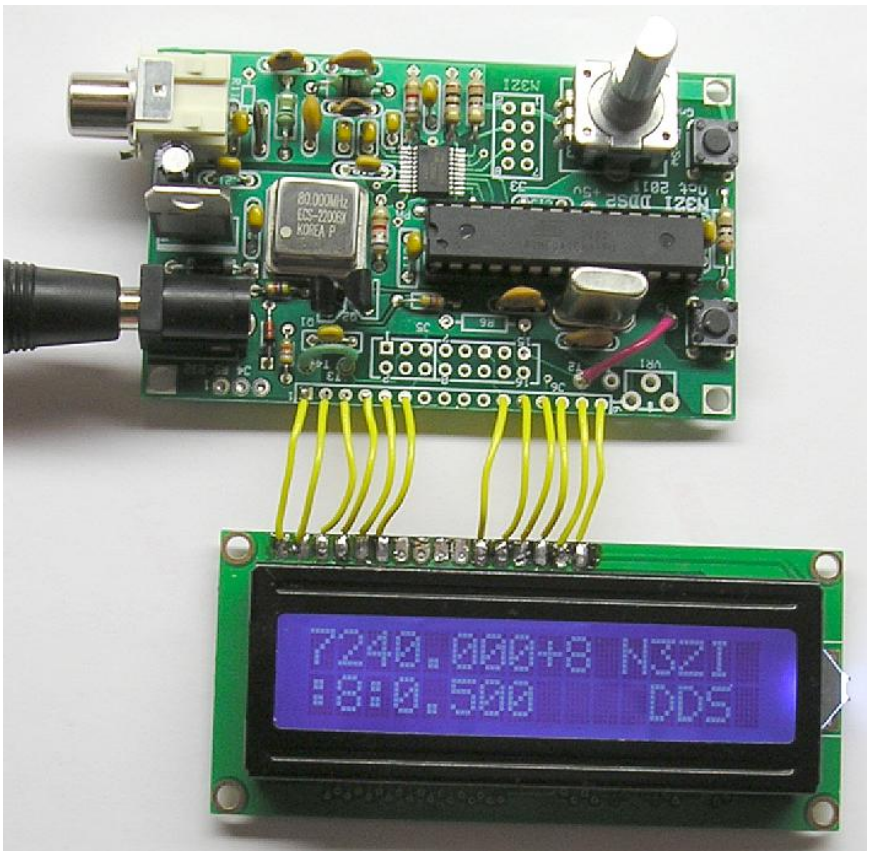
NIC'S NOTES #1. VK3COW

At the last "Open Saturday" (every second Saturday each month) at the BARG Clubrooms, we always try and bring something along for "Show and Tell" . I brought along a 3BZ Coast-watcher Receiver (valve) from the 1940s and a Codan HF transceiver which I procured at a hamfest some time ago. The Codan is missing its remote 'head'. It is an old rig that is a ten-channel crystal-locked rig; and I bought it for the 100 watt RF amplifier section with the relay switched output filters.

I Recall from the late 1960s using a crystal locked rig, but to make it frequency agile on receive I simply put a parallel tuned circuit consisting of a coil and variable capacitor across the crystal socket and I had a tuneable receiver! Crude, drifted a bit, but worked well. But then we did things differently in those days!

Anyway, after a discussion with Lachlan VK3ALM about the virtues of a Digital Direct Synthesis Variable Frequency Oscillator (DDS VFO) I realised that if I was able to purchase a kit, perhaps all I needed to do is plug the output of the DDS VFO into the Codan's crystal socket and I would suddenly have a frequency agile rig!

A search on the internet revealed a couple of interesting sites; and, I now have a DDS VFO and a QRP 20m rig on their way! Thought I'd share these websites with you...especially as one is here in Oz!



I should add that some DDS VFOs are rather "lumpy" or cog-like in their tuning because the jump in 50 Hz steps when tuning.. The one on this website (www.pongrance.com) is in 1 Hz steps and is so smooth in its tuning that it sounds like an analogue VFO. Very Impressive read outs and resolution!

The other website, which also offers a DDS VFO along with QRP SSB Transceivers, is here in Oz and is well worth a look! (www.ozqrp.com). The resolution on the tuning is also excellent!

Well, 73 for now....Nic VK3COW. Do hope to see you on one of the informal Saturdays. I'm usually there at 12 midday :-)

Operating 24 Volt Relays from a 12 Volt Supply

In several projects undertaken in recent times particularly in the VHF/Microwave area many of the relays used (for example the antenna changeover relay) available on the surplus market require 24 volts to make them operate. This is quite frustrating as for portable operation the normal available voltage is 12 volts DC.

Often it was necessary to make a small switching supply to generate 24 volts to perform this task. However the circuit shown below is one alternative that allows such relays to operate from a 12 volt DC source.

In this circuit capacitor C1 charges to 12 volt supply and when the PTT is applied the voltage across the C1 is added to the supply volts providing 24 volts across the relay to operate it. Once the relay is operated it no longer requires the higher voltage to maintain operation and will hold with only 12 volts being applied.

R1 = 1K.
D1, D2 = 1N4004
TR1 = BD142 / 681 - really, any medium power NPN
C1 = 1000uF

There are a couple of precautions:-

In most cases the PTT circuit cannot handle the current through the relay so a small driver transistor such as a BC548 with a series resistor in the base circuit to limit the current such as 10K ohm will overcome this problem.

Along with other club members this circuit has been successfully used thus removing the need to make a much more complex switching 24 volt supply from the commonly available 12 volts DC.

73, Ian – VK3AXH