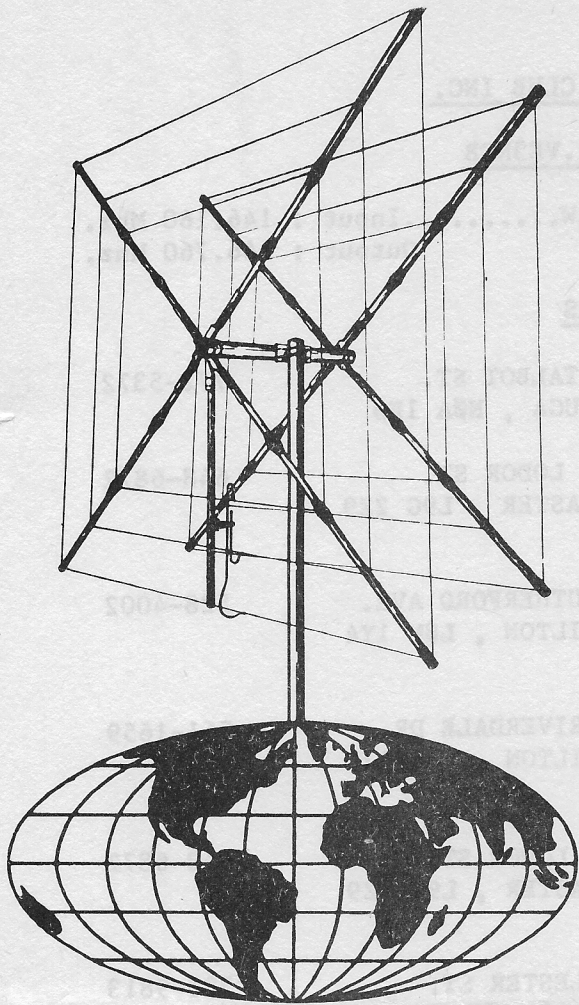


THE HAMILTON AMATEUR

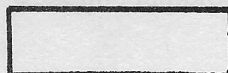


HAMILTON AMATEUR RADIO CLUB INC.
P.O. BOX 253
HAMILTON, ONTARIO
L8N 3T8

FIRST
CLASS



Gerry Goldberg VE3HLI
17 Cottrill
Hamilton, Ont. L8S 3L5



***** MAY MEETING PROGRAM *****

Date: Weds, May 18, 1977

Time: 8:00 P.M.

Place: Chedoke Continuing Care Centre

Subject: "Homebrew Night".... So all those with projects completed during the winter are asked to participate in this evening. Also, there will be a discussion regarding the club's activities for the ARRL Field Day.

Coming Events

May 20 - 22/77: Rochester Hamfest, Rochester, New York.
 June 3-5/77: ARRL National Convention, Toronto, Ont. Sponsored by the Scarborough ARC.
 June 11/77: Central Ontario Amateur Radio Fleamarket sponsored by Guelph ARC, Guelph, Ont.
 June 25 - 26/77: ARRL Field Day.
 July 8 - 10/77: Ontario Hamfest, Milton Fairgrounds, Milton, Ont. contact: Ontario Hamfest, P.O. Box 836, Burlington, Ontario.

EDITOR'S EDITIONS

The warm weather has finally arrived, and another month and a half until the summer break. Activity outdoors must be increasing due to the slow decline of activity on the repeater.

Speaking of the repeater, it is with great concern that many of the users of VE3DRW are becoming lax in thier "dragging thier feet" for 2-3 seconds before they reply to the person they are speaking to, in order to allow for any station wishing to "break" onto the frequency. The situation is becoming more frequent and it has been suggested that perhaps we should install a "beeper", such as on VE3RSB, that people not transmit until after they hear the beep!!

Tip of the 'ol beam to the people who took part in the recent Salvation Army Red Shield Appeal. It was very well run and from the outside, looked quite "professional". Thanks to all concerned for again making another member of our community, aware of Amateur Radio and the valued assistance and potential is has to assist our fellow Hamiltonians.

Last month, it was mentioned that the technical committee was putting out "feelers" to see what sort of project the general membership would like to see organized for the upcoming Fall session. Would you believe it! Only 2 or 3 people actually took the time, to advise a member of the executive of thier thoughts. If you have any thoughts on a project, please speak up. A great job was done on the QSY project, we can do it again with something else - Freq. Counter? Power Supply? Bench Power Supply? 2 meter Base Antennas? Keyers? QSL? (pse acklge)

The get together at the Stoney Inn on Hwy 8 near Grays Road, was posponed last month due to the Dayton week-end, but plans have been made to receive a group again at the end of the month - Friday, May 27 starting about 6:30 - 7:00 P.M. See you there!!

cont'd next page.....

Editor's Editions, Cont'd

The request for organizing Transmitter Hunts, Family Picnic, etc. has again been mentioned. Anyone interested in getting involved with the organization and planning of such activities, please contact Norm Freidin VE3CZI.

Our next club meeting will again feature the homebrew talents of our members who work hard all winter productin thier little contribution to fighting the inflationary cost of Amateur Radio Equipment. Also, we shall be discussing Field Day Arrangements, so be prepared to get involved in Amateur Radio's greatest Outdoor Endurance Contest. Wonder if our Field Day - Typical Operator will show again this year?

73's

Norm Freidin VE3CZI
Ye 'ol Editor

IC Project

It is hoped that all those participating in the IC Project are finding it of some benefit and finding thier way around the newer IC articles appearing in the Amateur Radio Magazines.

Would all those who have NOT received all of thier parts for thier kits, please contact Glen VE3DSP or Max VE3DNM A.S.A.P., as an auction will be held at an upcoming club meeting on the remaining parts, in order that Max can make space for the other valuable "stuff" he'll be getting at the upcoming local flea markets!!

RG-213/U COAX CABLE

At the last club meeting, a couple of members requested that we purchase RG-213/U coax (similar to RG-8/U but better quality). After checking into the prices, we find that we can offer it to the club membership at a cost of approx. 30¢ per foot. However, due to the initial capital investment, the executive would like to have any club members, wishing this quality 50 ohm coax, to show thier good faith, by ordering the amount desired, sending in a deposit of \$10.00 minimum or 20% of the total cost of thier requirement, whichever is larger. If we cannot obtain the coax at the above stated price, all deposits shall be refunded. If you do not pick up the coax ordered, you lose the deposit. Please contact Glenn VE3FHQ with verbal orders, and followed by the deposit (or give both at the same time). Deadline for orders is Sat. May 21/77. Cheques to be made out to Hamilton Amateur Radio Club. A minimum quota of approx. $\frac{1}{2}$ the total cost must be deposited before an order will be placed.

MEMBERSHIP NEWS

The Red Star with 77 inside, you will find inside this Issue of the Bulletin, is for sticking onto your Membership Certificate. If you do not have a certificate, or haven't paid your dues, or the address is wrong on this bulletin, Call me and tell me, ~~xx~~

73's

Ernie Shaw VE3HZA
Membership Chairman

..... Don't underestimate yourself -- leave it to others.

AREC NEWS

Thanks to all who assisted in the Salvation Army exercise on May 2/77. See article below, by Dave VE3HTC on the exercise. A total of 36 fellows participated. My thanks to Les VE3EGT for the use of his 2 meter Base and thanks to Stan VE3GFE for making available his base as stand-by.

If you know of an emergency. Please call me, or one of our Assistant Emergency Co-ordinators. VE3DSP, ARX, BOY, FLZ, GFE, CZI, HSN or HTC.

Thanks to VE3ANW who has stepped down from A.E.C. Thanks Bob for your assistance.

Glenn Gibson VE3FHQ
Emergency Co-ordinator

AREC ExerciseSalvation Army - Red Shield Appeal

On Monday May 2/77, the Hamilton AREC participated in the Salvation Army Red Shield Appeal. Portable Station VE3RCB was set up at 28 Rebecca St. to dispatch mobiles to locations in Hamilton and Stoney Creek to pick up donations. The following were involved:

Standing by to assist if needed:

VE3DJF, DQU, DTQ, ANW, FLZ, DQS, EBT, FHB, Ron Bradshaw, Cavin Barker.

Available at home for navigational assistance:

VE3FEZ Pete on VE3DRW

VE3DNM Max on 146.52

Base crew on duty:

VE3HTC, VE3BOY, VE3ARX, VE3FHQ and Marge Dykstra.

Mobiles:

VE3ISX, GFE, DOU, EHJ, ITA, with sons Larry and Dave, VE3DNB, with wife Ruth, VE3FYQ, HCL, BLT, DZP, HLI, EJD, RW, FBU, CJW, FDK.

Forty-two pick ups and deliveries were made during the evening from 1730 to 2330.

A vote of thanks to all those involved.

Dave Rypma
VE3HTC

..... There are two kinds of people at parties - those who want to go home early and those who want to be the last ones in the place. The trouble is that they're usually married to each other.

..... Too many people spend money they haven't earned, to buy things they don't want, to impress people they don't like. (Will Rogers)

..... All pay toilets should be banned, for if the Lord wanted them to be, we would all have been born with the exact change.

THE ORDER OF THE GAVEL.....HISTORY IN THE MAKING!

APRIL 20th WILL LONG BE REMEMBERED AS A MOST ENJOYABLE EVENING OF GENUINE FELLOWSHIP, AS PAST PRESIDENTS FROM FAR AND WIDE RENDEZVOUS'D FOR THE DEDICATION OF THE "ORDER OF THE GAVEL". WE WERE THRILLED WHEN ART FERGUSON VE3HP, OUR FIRST CLUB PRESIDENT OF 1933, GRACIOUSLY INVITED MRS. INEZ CLEMENCE TO ASSIST HIM IN UNVEILING THE BEAUTIFUL ORDER OF THE GAVEL PLAQUE: FOR IT WAS AT THE HOME OF INEZ AND THE LATE WIB CLEMENCE, BACK IN 1932, THAT THE GROUND WORK WAS LAID FOR THE FOUNDATION OF THE HAMILTON AMATEUR RADIO CLUB IN 1933.

HOW INSPIRING WAS THE DEDICATION SERVICE PERFORMED BY REV. JAMES THOMAS VE3FBU! HEARTS WERE TOUCHED IN THE PRAYER FOR MEMBERS AND THEIR FAMILIES WHO SERVED IN THE PAST, PRESENT, AND IN THE YEARS TO COME. WE THANK YOU SO MUCH, JIM.

THE REMINISCENT THOUGHTS EXPRESSED BY PAST PRESIDENTS, BROUGHT BACK MEMORIES OF PLEASANT AND EXCITING DAYS OF THE PAST AND WE THANK EACH ONE FOR SHARING WITH US.

WE WERE VERY PLEASED AND JUST A LITTLE PROUD THAT NOEL EATON VE3CJ CAN SPEAK OF H.A.R.C. AS "HIS CLUB", AND COULD BE PRESENT WITH THE FELLOW PAST PRESIDENTS TO BE RECEIVED INTO THE "ORDER OF THE GAVEL".

WE DIDN'T KNOW WE HAD SUCH AN ACCOMPLISHED ORATOR IN THE CLUB BUT GEOFF LEGG VE3GLL, SECRETARY OF THE ORDER OF THE GAVEL, LEFT NO DOUBT IN ANYONE'S MIND. THAT WAS A TERRIFIC INTRODUCTION GEOFF, AND SET THE TONE FOR THE EVENING.

YES, IT WAS AN UNFORGETTABLE NIGHT, AS HISTORY WAS BEING MADE. NONE OF IT COULD POSSIBLY HAVE BEEN DONE IF YOU, THE FELLOW MEMBERS OF THE CLUB, HAD NOT THE VISION TO SUPPORT US ALL THE WAY. IT HAS COST US SOMETHING, BUT THE REWARDS ARE YET TO BE FELT FOR YEARS TO COME. LOOKING BACK TO THIS DATE IN HISTORY WILL ALWAYS BRING A WARM FEELING IN YOUR HEART AS YOU CONTEMPLATE THAT AGE OLD MOTTO....."THE REWARD OF A THING WELL DONE, IS TO HAVE DONE IT!"

THANK YOU SO MUCH!


BILL MC CASLIN VE3ARX

ON BEHALF OF THE EXECUTIVE HARC

HERE AND THERE

- Welcome to the Amateur Ranks to: Trevor VE3ITR, Eric VE3IUE, Ron VE3IUJ, Rob VE3IU~~U~~, Tom VE3ITK, Dave VE3ITV. May you work much Dx, and may all your problems be not related to TVI or BCI !!
- 2 meter FM is an intercom to local club members, but what do you do when the local repeater is clogged with traffic not of interest to you? Do like the Ottawa group on VE2CRA... install Tone Decoders on your receiver, programed to open your receiver speaker only when receiving your coded signal. (we will watch this development with much interest, and hopefully the originator, Rob VE3ACY in Ottawa, will co-ordinate with us, on a similar project... Ed) (Credit: Ottawa Groundwave)
- Another surplus electronics location in Toronto. Formerly Protronics now called ARCON ELECTRONICS, located at 91 Queen St. East, is operated by Jerry Sky VE3FKS and Bill Jackson VE3GXR. They will be featuring electronic components, test equipment, micro-processors and while supply lasts, bargain prices on surplus gear and parts. Plans call for the sale of complete Amateur Radio transmitters, receivers, xcvsr, etc. Those persons buying same will have to prove they are entitled to use the equipment (a very good point, hope other suppliers take note) Also, they expect to start a service whereby they will assist Hams by selling their used equipment for them on consignment. New Phone number is 868-1315 (Credit: Metro ARC Bulletin)
- There is a W4 in Alabama, who recently received his CB License, gets on the CB Channels nightly, speaks in plain english and gets other CBers involved in technical topics related to antennas, propagation, etc. When asked where he got this information, he told them that it was all available each Tuesday evening at the Classs he teaches on Amateur Radio. (Credit: ARRL Newsletter)
- The March issue of the Reader's Digest, contains a most interesting and indeed factual account of amateur radio in Canada, entitled Airwave Adventure. (Credit: CRRL Newsletter)

USE OF ELECTRONIC TEST EQUIPMENT AND TROUBLESHOOTING TECHNIQUES

Are you interested in finding out just how that VTVM work, why is it better than a VOM; How does an oscilloscope work, and what can I do with it; just how does a Frequency Counter operate and what limits some to operate only to 30 MHz, while others can be used up to 500 MHz;.... Just how do I go about troubleshooting a fault on my priceless, 20 year old receiver that just quit after faithful years of operation. What steps are needed to bring it back to life?

If any of the above have haunted you in the past, and you are looking for some answers, maybe we can help.

Two local amateurs, Rae VE3CZN and Norm VE3CZI have gathered their talents and will be presenting a course, pending the quota registration is met, on the Use of Electronic Test Eqpt and Troubleshooting Tech.

If you are interested, please complete the form below and mail to Mr. R. Baker VE3CZN, 716 Northshore Blvd. E., Burlington, Ont. L7T 1X6 or Norm Freidin VE3CZI, 42 Lester St., Hamilton, Ont. L8V 4P5. We have to ~~xxxx~~ show Mohawk College that there is sufficient numbers to arrange for a room and Test Equipment.

Yes, I am interested in the Course: Name: _____
 Address _____ Phone _____

Citizens Band planned for Britian

A group of interested individuals are campaigning for the establishment of a VHF Citizen's Band in the U.K.

The Technical proposal sent to the Home Office contains the following points to ensure that the British CB suffers from few of the disadvantages of the American one.

- 1) Modulation shall be F.M. which avoids many problems of TVI, BCI and audio eqpt break-in.
- 2) Each transceiver contains an automatic identifying signal which is transmitted every time the transmit key is depressed. This means that anyone misusing the CB can easily be identified.
- 3) Transmission time to be limited to 75 seconds to prevent channel being monopolised. (Credit: International Electronics Magazine)

Attention FT-101 Owners:

An FT-101 service manual will be available in Feb. 1977 according to a Yaesu news release. Owners of the various models of this popular rig will appreciate the 200 page technical manual written in layman's terms by Bernard Tower W6RNW who is Gen. Mgr of Yaesu Electronics Corp. Every refinement of the popular FT-101 will be detailed, along with explanations of the function and operation of every PC Board. Troubleshooting techniques, voltage and resistance-measuring methods, modifications and update of older models will be covered. Order the manual for \$25.00 FOB from Yaesu Electronics Corp., Box 498, 1594 Downey Ave., Paramount, California 90723 (Credit: HR Report via Nortopic)

CB Walkie-Talkies move from 27 MHz

Acting on Docket 20119, the FCC has shifted the 100 mw units that can be operated without a license from the 27 MHz band to 49.82 - 49.90 MHz. Manufacture of the 27 MHz transceivers is permitted for one more year, and their use will be permitted until 1983.

(Credit: Margogram)

Keep Amateur Radio Alive!

One suggestion for keeping ham radio alive is to give ham radio books to your local library.

Many librarys have lot of requests for these types of books, mostly by young people. Look around your shack. Aren't there at least a few books that you don't read anymore? That you haven't needed in years? Honestly, do you think you really need these books? What a shame! These good books, sitting there, when they might be used by a high school student and gotten into Ham Radio. (Edited from 73 Magazine)

RESISTORS, CAPACITORS AND THINGS

by Norm Freidin VE3CZI

The electronics field is a wierd and wonderful place. The functions that are accomplished using electronics are not new to any of us.

Although many electronic components are used to make up the circuits, the most commonly used components are the resistor and the capacitor. Below, I have attempted to layout a description of various types of resistors and capacitors, and explain some of the aspects of these parts as they may be applicable to Audio and R.F. uses

RESISTORS

(1) Carbon Composition:

Carbon Composition resistors are probably the most popular resistor chosen for circuit design. They are available in a wide range of resistance values and in power ratings from 1/10 to 5 watts. Basically, the carbon composition resistor uses carbon as the conducting material, but one will find that each various manufacturer will his own mixture of carbon and binders, different manufacturing process to produce basically the same product but will vary in some respect.

Carbon Composition resistors exhibit little change in effective DC resistance up to freq \times of about 100 KHz. Resistance values above 300K ohms start to decrease in resistance at approx. 100 KHz. Above 1 MHz, all resistance values start to decrease.

(2) Fixed Wire-Wound:

A wire wound resistor is an accurately determined length of metal-alloy wire, wrapped around a core and sealed to protect it from mechanical or environmental hazards. They are available as low power insulated types, precision types and power types. The stability of these resistors is somewhat better than that of composition resistors, and they may be preferred except where a non-inductive resistor is required.

Wire wound resistors have inductive and capacitive effects and are unsuited for use above 50 KHz, even when specially wound to reduce the inductance and capacitance. Wire wound resistors usually exhibit an increase in resistance at high freq \times . because of "skin" effect.

Almost all resistor applications requiring the dissipation of more than one or two watts of power, either AC or DC, and going up through the audio freq. range, are well handled by wire wounds.

(3) Fixed Film:

Film-type resistors use a thin layer of resistive material deposited on an insulating core. The low power types are more stable than the usual composition resistors. Except for very high precision requirements, film-type resistors are a good alternative to accurate wire wound resistors, being both smaller and less expensive and having excellent noise characteristics.

The power types are similar in size and performance to conventional wire wound power resistors. While their 200° C maximum operating temperature limits the power rating, the maximum resistance value available for a given physical size is much higher than that of the corresponding wire-wound resistor.

Film types have the best high freq. performance. The effective DC resistance for most resistance values remains fairly constant up to 100 MHz and decreases at higher frequencies. In general, the higher the resistance value, the greater the effect of frequency.

RESISTORS, CAPACITORS AND THINGS CONT'D

Film resistors are fairly stable up to about 10 MHz. Because of the extremely thin resistive film, skin effect is small. At frequencies above 10 MHz, it is advisable to use only unspiralized units if inductive effects are to be minimized (there are available in low resistance values only).

Under extreme exposure, deposited-carbon resistors deteriorate rapidly unless the element is protected. Encapsulated or hermetically sealed units are preferred for such applications. Open-circuiting in storage as the result of corrosion under the end caps has been reported in all types of film resistors. Silver plated caps and core ends effectively overcome this problem.

(4) Adjustable:

Adjustable resistors are available with several types of resistance elements: Carbon Composition, wire-wound and metallic film.

The wattage of an adjustable resistor is based on using the full resistance element; if only a portion of the element is used, the allowable wattage is reduced approx. in the same proportion as the resistance.

CAPACITORS

Capacitors are available for use in AC or DC circuits. A DC capacitor is designed to operate on direct current ONLY. It is normally not suitable for use above 200 volts AC because of the occurrence of discharges in internal gas bubbles. An AC capacitor is designed to have freedom from internal discharges and low internal heating. It is normally not suitable for use on DC.

There are three broad classes of capacitors:

(A) Low-loss capacitors with good capacitance stability. There are usually of mica, glass, ceramic or a low-loss plastic such as polystyrene.

(B) Capacitors of medium loss and med. stability usually required to operate over a fairly wide range of AC & DC voltages. This need is met by paper, plastic film, or high-K ceramic types.

(C) Capacitors of the highest possible capacitance per unit volume are the electrolytics, which are normally made either of aluminum or tantalum.

Types of Capacitors(1) Plastic Film Capacitors:

At the present time, there are two classes of plastic film capacitors recognized.

(a) Polystyrene Capacitors: Polystyrene is a non polar plastic and has excellent electrical characteristics which are independent of freq.

(b) Polyester Film: Strictly speaking, these are the polyethylene terephthalates (mylar, melinex, hostaphan) but the polycarbonates are now included in this group because they have similar electrical characteristics.

Moisture usually has little effect on the dielectric properties of plastic films, and capacitors made from them require less protection than paper or mica types.

(2) Electrolytic Capacitors:

The term "electrolytic capacitor" is applied to any capacitor in which the dielectric layer is formed by an electrolytic method. The capacitor does not necessarily contain an electrolyte.

Resistors, Capacitors and Things, Cont'd

To use electrolytic capacitors in series-parallel, stabilizing resistors should be used to equalize the voltage distribution. It should also be noted that, even, when the case is not connected to one terminal, a low-resistance path exists between it and the electrodes. The case must be insulated from the chassis, particularly if the chassis and the negative terminal are not at the same potential.

(a) Aluminum Electrolytics: This is the most widely known electrolytic capacitor and is used extensively in radio and T.V. equipment.

Conventional Aluminum Electrolytic capacitors which have gone 6 months or more without voltage applied, may need to be reformed. Rated voltage is applied from a DC source with an internal resistance of 1500 ohms for capacitors with a rated voltage exceeding 100 volts or 150 ohms for capacitors with a rated voltage equal to or less than 100 volts. The voltage must be applied for one hour after reaching rated value. The capacitor is then discharged through a resistor of 1 ohm/vol.

(b) Tantalum Foil-Type Electrolytics: This type of capacitor was introduced around 1950 to provide a more reliable type of electrolytic capacitor without shelf-life limitation. These capacitors are smaller than their aluminum counterparts and will operate at temperatures up to about 125°C. The plain foil types usually exhibit less variation of capacitance with temperature of frequency.

(3) Ceramic Capacitors

Electrical ceramics have a wide range of electrical characteristics which makes them the most versatile of capacitor dielectric materials.

The low-K materials have virtually linear characteristics and their properties are independent of frequency over the normal range. Low-K ~~materials~~ ceramics are suitable for resonant circuit or filter application, particularly where temperature compensation is a requirement. Disc and tubular types are the best forms for this purpose. Stability of capacitance is good, being next to that of mica and polystyrene capacitors.

The high-K materials are the ferroelectrics. Because of their crystal structure, they sometimes have very high values of internal polarization, giving very high effective dielectric constant. High-K ceramics are suitable for coupling and decoupling applications, where stable capacitance is not a requirement.

Inductance in the leads and element causes parallel resonance in the MHz region. Care is necessary in their application above about 50 MHz for tubular styles and about 500 MHz for disc types.

(4) Paper Foil-Type Capacitors

Although paper capacitors have been largely replaced by plastic film types in electronic circuits, they are nevertheless, still unsurpassed for high voltage DC and AC power applications. They fall within the category of medium loss and medium stability, and provide an economical solution in this field.

Paper capacitors cover a wide range of applications as follows:

(1) Low Voltage DC: Capacitors in tubular form are used for coupling and decoupling in electronic circuits.

(2) High Voltage DC: Capacitors in smoothing filters, power-separating filters, energy-storage-capacitors, etc.

(3) Low Voltage AC: Motor Start, fluorescent lighting, interference suppression, and power-factor correction.

Resistors, Capacitors and Things, Cont'd

(4) High Voltage AC: Power factor correction, power-line coupling, distribution capacitors for high voltage switchgear, voltage-dividing capacitor for AC voltage measurement, etc.

(5) Metallized Paper Capacitors

Direct Current Application: Metallized paper capacitors are often used for coupling and decoupling applications in which small size is particularly important.

Alternating Current applications: Special designs have been developed for use on AC, particularly for motor-starting and fluorescent lighting applications.

(6) MICA Capacitors

Mica capacitors fall within the classification of low loss and good capacitance stability.

Because of their low temperature coefficient of capacitance and good capacitance stability, both with temperature and frequency, mica capacitors are invaluable for filter applications.

18 Ways to Wreck an Organization

1. Seldom, if ever, attend a meeting.
2. If you do, find fault with the work of the officers.
3. Never accept an office. It's easier to criticize than to do things.
4. If asked your opinion on a matter, tell the chairman you have nothing to say. But say plenty after the meeting.
5. Do no more than absolutely necessary. When others roll up their sleeves and help matters along, howl that the organization is run by a clique.
6. Never exercise your voting privilege, but shout that your opinion is never asked.
7. When a banquet is given, tell everyone that money is wasted on big, noisy blowouts that accomplish nothing.
8. When no banquets are given, say the organization is dead.
9. Don't tell the organization how it can help you. If it doesn't help you, resign.
10. If you receive service without joining, don't join.
11. Look out for something wrong. When you find it, yelp!
12. At every opportunity, threaten to quit, and get your friends to resign.
13. When you attend a meeting, vote to do something. Then go home and do the opposite.
14. Agree to everything said at the meeting. Disagree with it outside.
15. When asked for information, don't give it.
16. Cuss the organization for incompleteness of its information.
17. Get all the organization gives you, but don't give anything.
18. And last, kick about the cost of membership, though the cost to you is actually negligible. (Credit: London ARC Bulletin)

Did you Hear.....

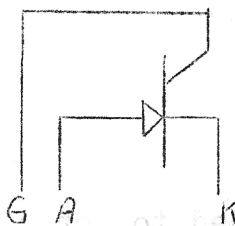
.. about the movie company that made an X-rated western - even the wagons weren't covered.

...about the new Japanese car - it has a buzzer that won't stop until you take off your shoes

...about the King Kong Cocktail - drink one and you feel like grabbing a girl and monkeying around.

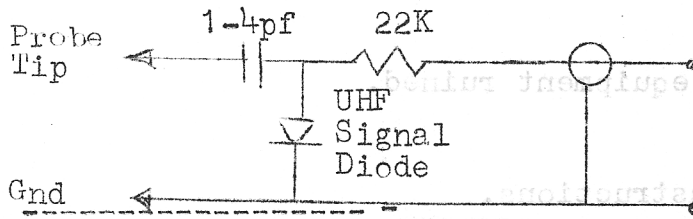
HINTS & KINKS

S.C.R. Testing:



To test, put an ohmmeter on R X 100; positive to "A", negative to "K", a HIGH reading should be observed.
 Short "G" to "A", meter should deflect to half scale. Remove the short and readings should remain.
 Remove the positive lead, the reading goes HIGH again

R.F. PROBE:

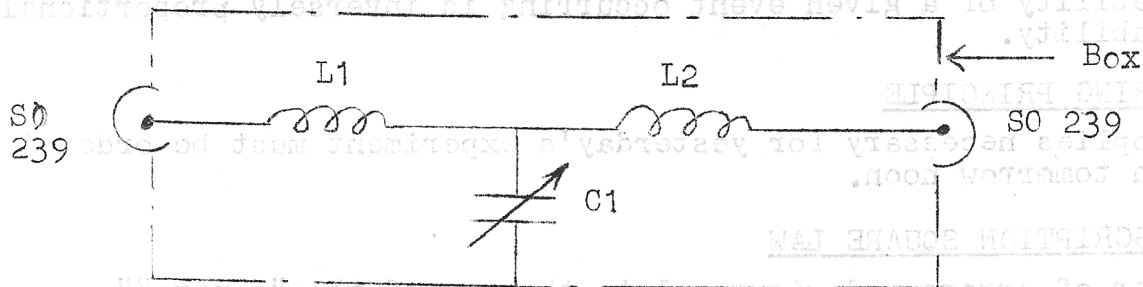


To V.O.M. or
50 ua meter

2 Meter "T" section tuner:

This unit can be inserted between your 2 meter rig and your antenna, and will null out any SWR caused by mismatched antennas. Use it the same as your low band Matchbox ie: Rig---- SWR Bridge --- Tuner---Ant.

Tnx to Tom VE3HM for this tuner.



L1 - L2 = #14 or 12 AWG 1/2" I.D. Spaced 1/2" 3 turns

C1= 50 pf Tuning Cap. Single hole mount 300-600 Working Volts

Bcx= Radio Shack #270-239

The Trouble with doing something right the first time is that nobody appreciates how difficult it was. - Walt West

2B
2E



Now who ever said that Shakespeare didn't know anything about Digital Logic!

LITTLE KNOWN SCIENTIFIC PRINCIPLES

Compilation of very important but little known Scientific Principles Related to Certain Peculiar Laws of Inexactitude, Perversity and Whimsey in Scientific Endeavour.

MURPHY'S LAW

If something can go wrong, it will.

SKINNER'S CONSTANT

That quantity which, when multiplied by, divided by, added to, or subtracted from the answer you get, gives you the answer you should have gotten. (this is also known as Flannegan's Finagling Factor)

HORNER'S FIVE THUMB POSTULATE

Experience varies directly with equipment ruined.

CAHN'S AXIOM

When all else fails, READ the instructions.

THE SPARE PARTS PRINCIPLE

The accessibility, during the recovery of small parts, which fall from the workbench, varies directly with the size of the part, and inversely with its importance to the completion of the work underway.

GUMPERSON'S LAW

The probability of a given event occurring is inversely proportional to its desirability.

THE ORDERING PRINCIPLE

Those supplies necessary for yesterday's experiment must be ordered no later than tomorrow noon.

THE TRANSCRIPTION SQUARE LAW

The number of errors made is equal to the sum of the "squares" employed.

CHISHOLM'S LAW OF HUMAN INTERACTION

Anytime that things appear to be going better, you have overlooked something.

RIDDLES CONSTANT

There are coexisting elements in frustration phenomena which separate expected results from achieved results.

THEORY OF INTERNATIONAL SOCIETY OF PHILOSOPHIC ENGINEERING

In any calculation, any error which can creep in, will.

RULE OF ACCURACY

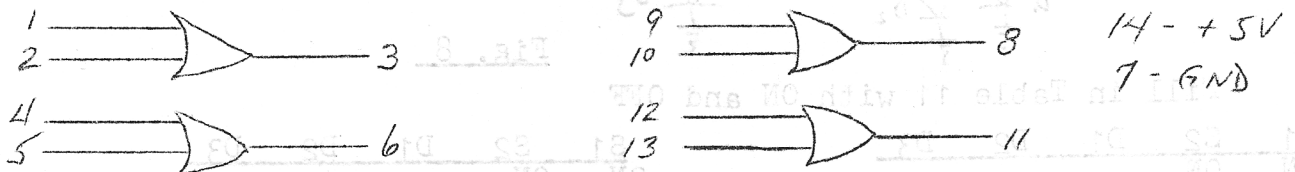
When working toward the solution of a problem, it always helps if you know the answer.

IC of the Month Part IV

SN 7432

General:

The 7432 contains 4 (puad), two input OR gates. The schematic is as follows:



This IC is a member of the 7400 family of TTL components and therefore the input will be high on an open input circuit.

Each output is capable of driving 16 ma and thus one output can drive about 10 inputs.

Test Set-Up Schematic

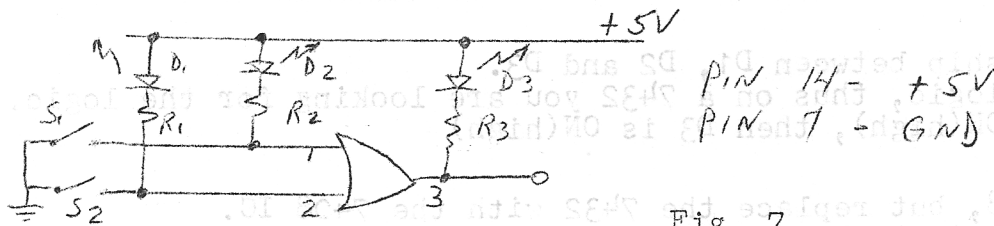


Fig. 7

Preparation for Test

Use the same set up as shown on Page 12 of last months issue

Test Results

Fill in Table 9 below with ON and OFF

S1	S2	D1	D2	D3
ON	OFF			
OFF	OFF			
ON	ON			
OFF	ON			

S1	S2	D1	D2	D3
ON	OFF			
OFF	OFF			
ON	ON			
OFF	ON			

Table 10

Table 11

Fill in Table 10 with H (high) and L (low)

General Comments

- The measurements to date have been based on Negative Logic. This is because the LED has been connected to the +5V line. The Lamp was only ON if the signal was low.

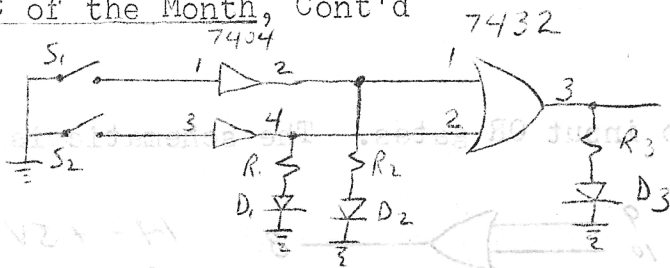
- This connect for negative Logic was necessary because the TTL logic inputs are at a HIGH on open circuit. If the LED had been connected differently on the input, the results were difficult to predict. To avoid this problem, we need a driver. (7404 has 8, see below)

- In TTL logic (7400 family) any output can be directly connected to any other devices input.

Positive Logic Tests

Reconnect your board to allow the connection shown below:

IC of the Month, Cont'd



Pin 14 - +5V
Pin 7 - GND

Fig. 8

Fill in Table 11 with ON and OFF

S1	S2	D1	D2	D3
ON	ON			
OFF	ON			
ON	OFF			
OFF	OFF			

Table 11

S1	S2	D1	D2	D3
ON	ON			
OFF	ON			
ON	OFF			
OFF	OFF			

Table 12

Use your Meter to fill in table 12 with High or Low.

Observations

- Note the relationship between D1, D2 and D3.
- This is positive logic, thus on a 7432 you are looking for the logic. if D1 OR D2 is ON(high), then D3 is ON(high)

Final 7408 Testing

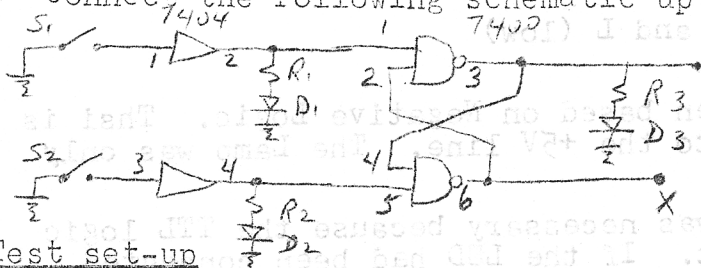
- Repeat the setup 8, but replace the 7432 with the 7408 IC.
- Record the results in tables identical to table 10 and 11.
- This is positive logic, thus on a 7408 you are looking for the logic if D1 AND D2 are ON(high), then D3 is ON(high)

Final 7400 Testing

- Make the same setup as fig. 8, but replace the 7432 with the 7400 IC.
- Record the results in tables identical to table 10 and 11.
- This is also positive logic, thus on a 7400 you are looking for logic if D1 AND D2 are ON(high), then D3 is NOT ON(high)
(NAND = Not AND)

An Elementary Memory (Latch)

- Connect the following schematic up on your board.



Pin 14 - +5V
Pin 7 - GND

Fig. 9

Test set-up

1. Start with S1 and S2 closed (D1 and D2 ON)
2. Momentarily open S1 (D1 momentarily OFF)
3. Note D3 (Record ON or OFF)
4. Momentarily open S2 (D2 momentarily OFF)
5. Note D3 (Record ON or OFF)
6. Repeat steps 2 to 5 several times.

Questions

- Was the action of D3 momentary or steady?
- What are the high and low states on the 7400 gates?
- What happens if both switches are open?
- What is the result on point 'X' as D3 is operated through steps 1 - 5?
- This is a Flip Flop action!!

RECORD YOUR RESULTS IN THE LOGBOOK. GOOD LUCK! Tech. Committee.

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- VE3ISH Dennis 659-7402
- Crystals for HW-202 freqs of: 25-85, 94 Sx, 34 Tx, 147.92 Sx, 46-06. \$6.00/pr
- VE3CZI Norm 388-9813
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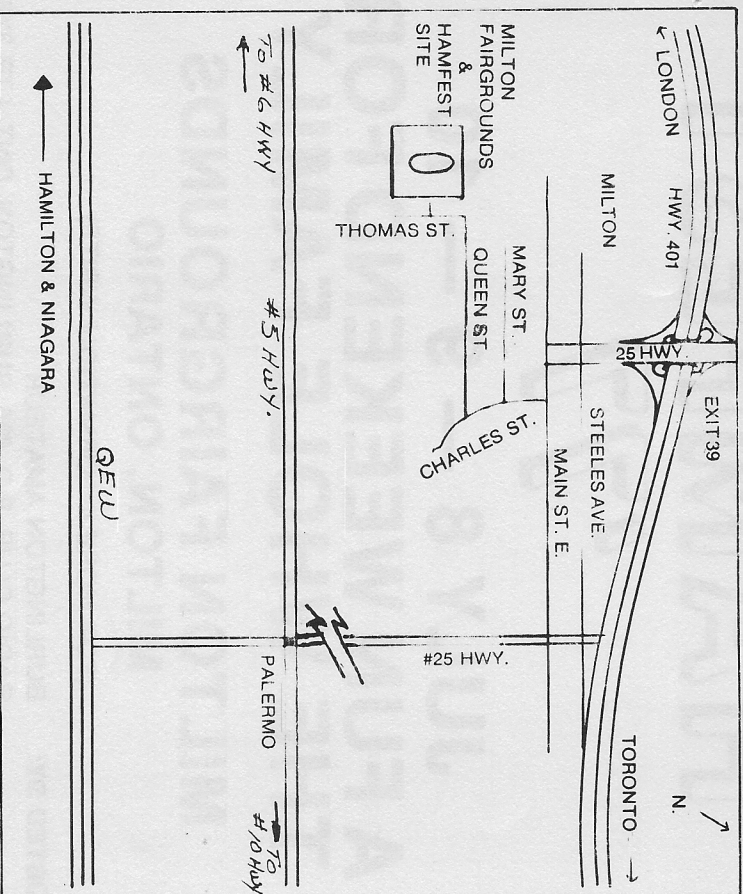
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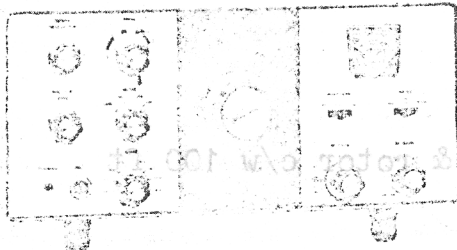
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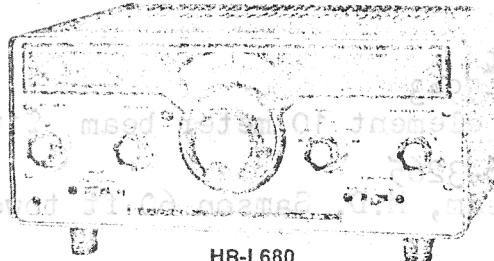
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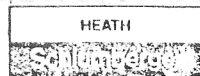
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HR-1680 SPECIFICATIONS

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