HAM HUM

Published by
AK-SAR-BEN AMATEUR RADIO CLUB, INC.
Post Office Box 291 — Downtown Station
Omaha, Nebraska 68101

July 1976

Vol. XXVI
No. 7

NEXT MEETING

WHEN: FRIDAY, JULY 9, 1976

TIME: 7:30 P.M.

WHERE: COMMUNICATIONS WORKERS OF AMERICA HALL
1920 South 44th Street, Omaha, NE
(Ground floor entrance—air conditioned—parking.)

PROGRAM: AMSAT – SPACEAGE COMMUNICATION TODAY VIA ORBITING SATELLITE CARRYING AMATEUR RADIO/OSCAR.

Doyle D. Kernes, WBØIUT, AMSAT Area Coordinator, will present a most interesting program on OSCAR – its "International Development" to launch – proper use of and equipment needed to communicate through the AMSAT OSCAR and future OSCARS.

Program will include an actual contact with OSCAR July 10, 1976 at 0216 GMT – July 9, 1976 at 9:16 P.M. local CDST.

Doyle is presently employed with the Lincoln Telephone Company and is an active member of the Lincoln Amateur Radio Club.

* * *

VISITORS WELCOME – REFRESHMENTS – EYEBALL QSOs

HAM HUM is the official organ of the Ak-Sar-Ben Amateur Radio Club, Inc., of Omaha, Nebraska, mailed monthly to all members and to others upon request.

Published by
AK-SAR-BEN AMATEUR RADIO CLUB, INC.
Post Office Box 291
Omaha, Nebraska 68101
Editor: Dick Eilers, WØYZV
Phone HOME: 397-3999
BUSINESS: 342-1402 - EX. 200
Associate Editor: John Snyder, WØWRT
Phone HOME: 556-1538
BUSINESS: 397-3000 - EX 3761

Deadline for August issue is July 23rd

Annual Dues:

Regular member	$7.50
Regular member and XYL	9.00
Student member	3.50

(due and payable each Jan. 1)

New member initiation fee	$1.00

Quarterly for balance of year:

Regular member	$2.00
Regular member and XYL	2.45
Student member	1.00

ADDITIONS TO ROSTER

Jerry W. Buscher, WBØSLF
5625 South 46th Street
Omaha, Nebraska 68117
Phone: 733-0851

Dennis Kain, WAØVJM
231 – 12th Avenue
Council Bluffs, Iowa 51501
Phone: 322-2315

Ronald Kucirek, WNØSWK
4204 Pacific Street
Omaha, Nebraska 68105
Phone: 554-0976

James (Jim) Leatherwood
907 LeMay Drive
Bellevue, Nebraska 68005
Phone: 292-0970

Tim L. Moody, WBØKHQ
7317 Washington Street
Ralston, Nebraska 68127
Phone: 331-7283

Stanley Swim, WNØSYG
3507 South 116th Avenue
Omaha, Nebraska 68144
Phone: 333-1946

****

RECENT CONTRIBUTORS

Ham Hum Postage

James V. Wilson, W4GDK

Repeater 34/94

Charles A. Michel, KØQVL
Floyd H. Schadendorf, WBØLXP

Sincere thanks to all!

****

INTELLIGENT

"Do you think there is intelligent life on Mars?"

"I certainly do. You don't see them wasting $30 billion to find out about us."

****

JUNE MEETING

By—Ed Eichler, WBØBCB

The first meeting this summer was held in a cool, air-conditioned CWA Hall at 1920 South 44th Street. It's a great place for the summer and there is plenty of parking in a well-lighted area.

The awards the Club received at the annual Volunteer of the Year Awards luncheon on May 19th at the Holiday Inn were presented to the Club membership. The Ak-Sar-Ben Amateur Radio Club, Inc. has every right to be proud of this recommendation. Congratulations!

For those who curiously listened to the voice of Marcella on 34/94 about four weeks ago, the real story unfolded as to the whereabouts of Marcella and an alleged stolen Standard hand held. Even though Marcella's telephone number was known, little was accomplished with law enforcement officials to recover the alleged stolen rig due to lack of evidence nor was there much that could be done to remove from the airways an alleged unlicensed user of amateur frequencies.

Not all was in vain. The exercise was a good practice session to what possibly is in store for amateurs in this area. Legal questions arose that must be answered by law enforcement agencies to citizens' rights. It was requested that the Board of Directors seek additional information and report back regarding this caper.

Field Day plans were discussed at length. No attempt will be made here to repeat these plans since Field Day will be reality by the next issue of Ham Hum. However, the Co-Chairmen have put a lot of thought into Field Day preparations in an attempt to accommodate the serious operator, to the individual who is just curious enough to come out and have a picnic and for some fun. Thank you, fellows!

Ron Luster, Chief Instructor at REI, an amateur electronic hobbyist, discussed basic test equipment and principles of operation of respective test equipment. He began with the normal test equipment, such as VOM, VTVM and a DVM, explaining how each is to be used and what each unit can test. Considerable time was spent on oscilloscopes and different functions of a general scope and a trigger scope and a dual trace scope.

Ron's program was very interesting including his REI humor. Tnx 73, Ron.

****

"You got a funnel or something? I gotta get a lotta tooth paste back in the tube."

****

MENTION CONVENTION

****

BALUNS

From an Engineering Report—
Hy-Gain Electronics Corp.

A balun is a matching device designed to couple an unbalanced transmission line to a balanced antenna or feedline. The name comes from the descriptive terms: balanced to unbalanced.

The half wave dipole (or the driven element of a yagi array) is a balanced radiator. When a dipole is fed at the center with a balanced line, the system is balanced and feedline radiation is nil. RF currents in each side of the feedline set up individual magnetic fields which are self-cancelling.

When a half wave dipole is fed directly into a coaxial line, RF from the balanced antenna flows down the coaxial braid. The magnetic fields caused by this current flow cannot be cancelled by the inner conductor since it is "trapped" inside the braid. Therefore, the currents on the braid radiate. This effects the unidirectional beam pattern and causes TVI. Even when the line impedance matches the antenna, RF on the braid causes the coax to become part of the resonant system. Such combinations are usually sensitive to small changes in the operating frequency.

Since the braid can radiate, it can also receive. This results in poor front to back ratio on a beam and undue pickup of man-made interference from wiring and objects near the coaxial feedline.

The correct solution is the installation of a balun. The most common balun is the quarter wave length stub or "bazooka" balun. This balun presents a high impedance to the currents trying to flow down the braid. The disadvantage of the bazooka balun is its frequency dependency. This balun is ineffective except at its designed frequency.

The Hy-Gain ferrite balun, BN-86, is frequency independent from 3-30 MHz and suitable for use on multi-band antennas. The electrical operation is similar to a 1 : 1 transformer. The transformer is not a tuned circuit and is very broad band. Therefore, the BN-86 is a balun applicable for use on dipoles and beams.

de W6SD Carrier

****

200 WATT SSB TRANSCEIVER POWER SUPPLY

By Earl Spencer, K4FQU

After a guy shells out enough to buy a transceiver these days, he usually doesn't have anything left for the companion power supply which can cost near a C note one way or the other. These power supplies usually just make the grade and that's all, power wise. For about twenty bucks and a well stocked junk box, a supply can be homebrewed that will out-perform and outlast any commercial one by far.

The schematic is pretty well self-explanatory and is only meant as a guide, although it can be copied and used for most transceivers. This one has powered this author's NCX-5 for over four years with no trouble save one leaky filter capacitor during field day.

The diodes can be any diode that will handle the voltage and peak loads. Those shown are 1N740Ss available

through Thurow Dist. and are very satisfactory. They are rated at 400 volts and 400 mils. Four diodes are used in each leg as a safety factor while three could actually carry the 'oad. Any diodes can be used though the rule must be remembered when choosing them. The number of diodes in EACH leg MUST exceed the PIV factor of 1.4 times the total secondary voltage of the transformer. In this case, 1.4 times 800 equals 1120v 4 times 400v equals 1500v, thus the 1N740's will carry the load. The (SR) surge resistor will aid greatly in reducing the momentary PIV across the diode bridge.

The inset "A" shows the method of equalizing the load over each diode and is a must. Without them, SMOKE.

The transformer is an old and I do mean old, TV transformer. Most of today's TV transformers will not supply the load so it is wise to hunt around and find one about ten years old that is in good condition and test its capacity before building the power supply.

Choke input or capacitor input is a matter of taste; however, the choke input will give better regulation.

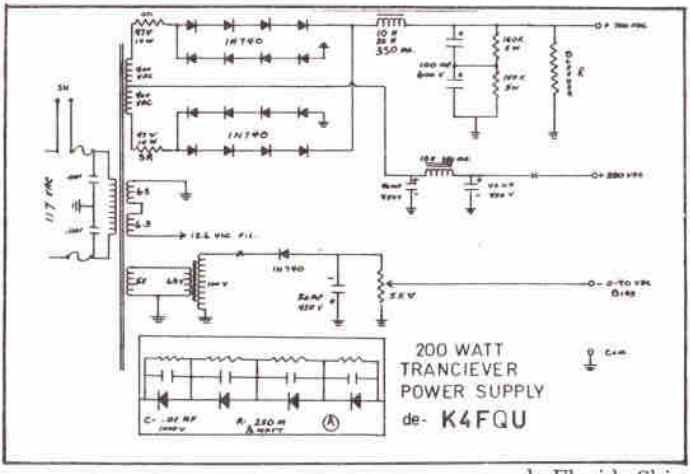
Bias supply was simply a filament transformer back to back with the heavy duty filament winding of the transformer. This may be juggled to suit your particular needs and a dropping resistor may be added if needed at the points marked "X."

The 6.3 volt windings are series connected if 12.6v is used.

There is no regulatory circuit included as most transceivers have regulators incorporated within the set.

The diode bridge can be built upon a circuit board 3" x 3" by placing the diodes on one side and the rc network on the reverse side. It may be mounted in any position without need of cooling, although it should be mounted where it will not be accidentally touched.

This one is built on a 2" x 8" x 12" aluminum chassis and weighs in at about 40 pounds. It has run the last four field days, and developed a leaky filter condenser about 6 a.m. Sunday, which was the only breakdown in over four years.



de Florida Skip

****

TECHNICAL TOPICS

By Cal Graf, W5LFM,
in San Antonio ARC's BULL-ETIN

Every school kid is well aware of the industrial revolution and how it affected our country's growth in the late 1800's. The microprocessor revolution seems to be upon us and it looks like it might last for a while. Motorola believes that the microprocessor revolution has only started. They predict that the total effect will continue to be felt for 200 years. Microprocessors reduce costs to a level which allows them to be used in applications never before considered economically practical.

A quartz crystal watch with LED or liquid crystal display (LCD) is a small version of the microcomputer. They are programmed at the integrated circuit (IC chip) manufacturer's plant rather than being programmed by a person sitting at a keyboard with a CRT display. Some of the more expensive quartz watches are programmed to fit a four-year cycle. That is, they are aware of the day of the month, including February but they automatically take care of Leap Year when February has 29 days. The watch resets itself and it is good for another four years. During that time the watch has kept track of the fact that it has counted 4 times ten to the 12th cycles of the quartz crystal. But just once every four years the circuit is activated so that it counts and displays the time for 29 February! A quartz watch on the wrist is actually more accurate and stable than the broadcast band AM transmitters, a BC transmitter being allowed 20 Hertz drift (2 parts in 10 to minus 5th), while the quartz watch has an accuracy of 2 parts to the minus 6th. An added benefit of the LED display is that it can be used to locate keyholes in the dark!

As research continues in the area of the light emitting diode (truly solid state lamp or light source) they shed more light. I recently received a green LED from Siemens (type LC-57-D) which is able to put out 30 millicandelas at a current of ten milliamperes. When they first came out years ago, they put out about .5 millicandelas at 20 mils of current. At a rated 60 mils of current, the green LED is bright enough to cast a cone of light like a prefocused flashlight bulb. And green is at the maximum of the human eye so it appears much brighter. The red LED has a maximum output at a frequency where the response of the eye is only 10% of that at green.

Have you thought about what effects a local lightning storm might have on your solid-state electronic devices? Consider this: during a lightning storm, voltages in excess of ten million volts and currents of thousands of amperes are generated and discharged from cloud to cloud and from cloud to ground. It is at these times that diodes, transistors, and triacs may fail even though the electronic device may not even be turned on. There is not yet much in the technical literature on the subject of lightning-induced electronic failures, but it may well be a design consideration of the future. There has been some data, however, in the current issue of The Electronic Technician and the RCA Transistor Manual. It seems that power line-

induced voltage transients may cause transients in the solid-state power supply and take out the diodes associated with the power supply. Several instances reported to me concern a sewing machine and a tape recorder. After the last lightning storm (of which there were many in San Antonio in April '76), the sewing machine would operate only at full speed and not operate at variable speeds as before. Either a diode or a triac in the speed control circuits has had its operating voltage exceeded. And thinking back, I noticed that my Radio Shack Timekube (5, 10, 15 MHz) receiver would no longer function. And it is battery operated (9 volts) but I was using an outdoor antenna laying on the ground (an exhausted long wire). I noticed later that if I tuned the audio 'way up and listened closely, I could still hear WWV very weakly. That meant that the transistor in the front end had gone out during one of the recent storms. So go back in your memory to see if your electronic device didn't fail after a lightning storm (even though you may not have noticed it 'til many days later). Seems like a good article for some electronic magazine!

Here is something you can count on. Arabic numerals, although based on number 10, does not include that particular numeral (it has 0 thru 9). And if you don't want to remember this, think about it. The Roman numbering system does not contain a zero. And that's saying a whole little!

Regards for now. Good luck,

Cal Graf, W5LFM

de Brownsville, Texas

****

STALLED CARS ARE EMERGENCIES

FCC NEWS

The following letter from the FCC, which appears on page 69 in the June, 1974 issue of *QST*, should clear up any question about what you can do on the radio for a motorist whose car has stalled or run out of gas.

> "The Amateur Radio Service rules, see Section 97.3 (x), define emergency communications as any communication relating to the immediate safety of an individual's life or the immediate protection of property. It is our view that this definition includes any communication relating to providing assistance for an automobile collision or breakdown. Communication in such instances to call for gasoline, repair parts, or towing service would be proper.
>
> . . . . –Charles A. Higginbotham, Chief, Safety and Special Radio Services Bureau"

But beware: any deviation from the regulations because of an emergency must be reported in writing to the FCC.

de Squelch Tales

****

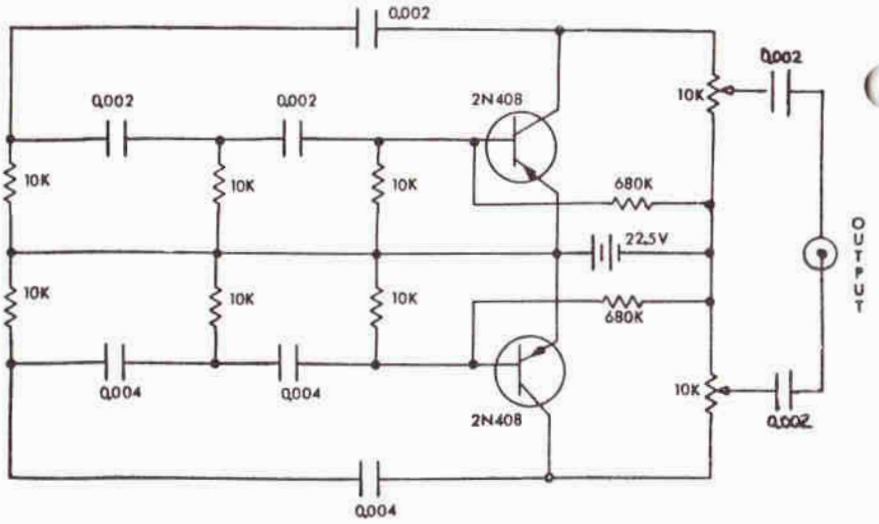
DOUG'S DANDIES – W5OOG – WEATHER WORKS WIRELESS WIZARD – who drives past several plants on his way to and from work, says that the worst fault any motorist can have is the belief that he has none.

de Brownsville, Texas

****

TWO-TONE SSB TEST OSCILLATOR

Marion O. Bazoon, AF43YO



Sooner or later in the course of adjusting a single sideband transmitter you are going to need a two-tone signal. There are many ways of obtaining two audio signals for such adjustments; however, here is a simple solid state circuit that can be built in a small minibox. Power levels in the circuit are low, so ¼ watt resistors can be used. The potentiometers can be of the small variety and the capacitors can have voltage ratings as low as 25 volts.

After the unit has been assembled and the preliminary checks made, measure the output of each of the tones on an oscilloscope. Set the 10K potentiometers so that the tone levels are exactly equal.

Power consumption in the unit is very small; however, if the unit will not be used for long periods of time, the battery should be removed. If you don't want to bother to remove the battery, you can install a switch in series with the battery to turn the unit off.

(Mike & Key - W8MGP)
via Florida Skip

****

"My husband is confused by the new holiday arrangement; so he has decided to celebrate every Monday."

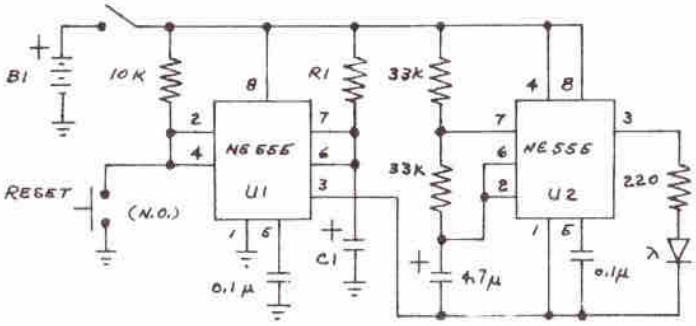
A SIMPLE ID REMINDER

By Bill Nelson, WN4CKS

One of the easiest regulations to break is the requirement to identify at least once every 10 minutes – don't let it happen to you!

Press the reset button on this simple ID reminder when you start a QSO and every time you identify. If you forget, the light will flash to remind you.

Circuit operation is straightforward: Momentarily pressing the reset button causes the output of U1 to go high for about 10 minutes (9 min., 10 sec. in the prototype unit). If the button is pressed again before the time-out period ends, U1 will start another 10 minute cycle. Such timers are called "retriggerable." Upon time-out, the output of U1 goes low, applying a ground to U2 which pulses an ID warning. With an R1 of 978K (910K and 68K) and a C1 of 440 uf (two-220 uf units), the time-out period will be about 550 seconds – 50 seconds of advance warning. A 1M pot can be substituted for R1 and adjusted for the desired time-out period. U2 causes the LED to flash about four times a second. B1 can be any voltage from 4.5 to 9 volts. While timing, the circuit draws about 6 MA and when timed out, about 42 MA at 9 volts. The circuit was not tested for RF sensitivity but with point-to-point wiring, it shouldn't be particularly sensitive.



10 MINUTE ID TIMER

BILL NELSON - WN4CKS

de Florida Skip

****

MENTION CONVENTION

****

HAM HUM SWAP

FOR SALE: Hustler CG-144 2 meter mobile antenna.
Also 2 meter beam.
Bernie Chap, WBØEYT, 2811 Bonnie Street,
Omaha, NE 68147; phone 731-0128

Party that bought 6 meter beam from me, please call 731-0128, Bernie, WBØEYT

FOR SALE: VHF receiver 108-130 MHz aircraft band, 120 V. AC.
Craig Hinton, WBØIAH; phone 895-2529

FOR SALE: Swan 240, 20, 40 and 75, 240 watts pep.
Heath 12 V. P.S.; Hustler antenna with 40 and 80 resonators. Complete bumper mount, ball, spring, etc. Complete mobile setup in excellent condition.
Asking $195.00; will dicker.
Pat Murphy, W6HXT/Ø; phone 292-2937

FOR SALE – FROM ESTATE OF LARRY DONNELLY, WØKCK (SILENT KEY)

Finished Goods

1 – Hammarlund HXL-One amplifier
1 – Hammarlund HX Fifty transmitter–not working
1 – EICO Model 425 oscilloscope
1 – EICO Model 315 signal generator
1 – RME 80 thru 10 preamp
1 – EICO Model 377 audio generator
1 – SWR Bridge
1 – Tripplet Model 625N multimeter
1 – Calrad multimeter
2 – Midland Model 23101B multimeter
1 – Midland Model 23106 multimeter
1 – B & W Model 600 grid dip meter with coils
1 – Japanese multimeter–WW II vintage
1 – Numercon digital clock
1 – TA140BW R2H Motorola receiver strip & transmitter strip with case
2 – Transistor audio amp in original boxes
1 – 12" Speaker in small wall cabinet
1 – B & W Model 381 TR switch
1 – Dow Key relay 115VAC coil
1 – Home built impedance bridge

Linear Parts

2 – 100 Mfd Sprague 4000 V capacitors
1 – Stancor filter choke

(Linear Parts – continued)

1 – Stancor plate transformer, 120V primary, 2000 or 2500V secondary; appears to be at least 1 amp.
– B & W #850 tank coil & bandsw.
1 – Thordarson plate transformer 115V primary, sec. 3750 CT-4750VCT at 300 MADC
2 – Johnson #122-275-1 tube sockets
1 – 100 ohm 100 W res.
2 – National #175A plate RF choke

Meters

1 – Altimeter–aircraft type
1 – 80 Amp zero center meter
1 – Tripplet 150 MA meter
1 – Tripplet 200 MA meter
1 – Simpson 15A meter

Mikes

1 – Stromsberg Carlson mike Model MD37AS
1 – Astatic Model N30
1 – R10N Model 200 Xtal mike
1 – Mobile SBE mike

5 – Telephone headsets with mike

1 – Bug
1 – Hand key

FOR SALE: Kenwood TS520 with CW filter, used less than 20 hours; External VFO520 and Speaker SP520 – $675.00.
Jerry Gunsolley, WBØPAY, 1705 S.W. 15th St.,
Lincoln, NE 68522; Phone (402) 475-7563

Interested in Kleinschmidt teletype machines?
Contact Jerry, WBØPAY, at above number

FOR SALE: Drake T4X Transmitter, R4B Receiver, Matching Speaker and AC Power Supply;
Drake L4B Linear Amplifier; SP600 Continuous Coverage Receiver
Royal Enders, KØLYO, c/o Ham Hum,
Box 291, Omaha, NE 68101 or contact WØYZV

****

MENTION CONVENTION

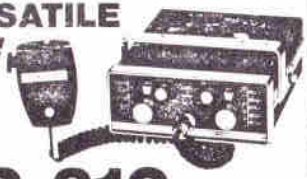
Hi Inc.

THE XK12 IS A REGULATED POWER SUPPLY, OPERATING FROM 115VAC, AND IT'S OUTPUT IS A --WELL-- REGULATED 12VDC. WITH LOW RIPPLE.
REG. $34.95--LIMITED SPEC. NOW $24.95 JULY !

THE XK12 IS RATED AT 4 AMP CONTINOUS AND 6 AMPS MOMENTARY PEAK. THE UNIT IS (WDH) 5-7/8 x 4-½ x 2-3/4". NET WT. IS 4 LB. SH-WT. IS 6 LB.

REG. $269.00--LIMITED SPEC. JULY $229.00 NOW !

VERSATILE NEW

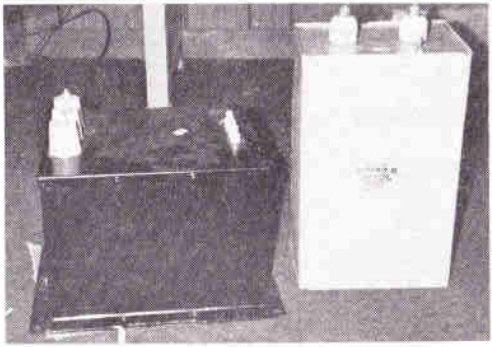


HR-312

- **More Channels...at the flip of a switch**
  Unlock the unique mode switch and 12 channels become 144
- **More Sensitivity, Less Interference**
  .25 µV Sensitivity plus 75 db adjacent channel selectivity and 70 db image rejection
- **More Power Out**
  35 watts nominal with a minimum of 30 watts across the band

WE NOW HAVE LARSEN ANTENNAS IN SEVERAL 2 METER STYLES !

Larsen Antennas



BRAND NEW, INDUSTRIAL GRADE, OIL-FILLED TRANSFORMER. WILL DELIVER 3168V AT 1 AMP. IN A FULL WAVE RECTIFIER (6336VAC-CT) 65 LB NET. TRUCK COLLECT ONLY--$49.95 SPECIAL
SPRAGUE HI-Q CAPACITOR: 100MFD/4KV GOOD PULLOUTS, NET 36/GROSS 46 LB. SPECIAL $39.95 (ADD FOR SHIP UPS.)

PLEASE NOTE OUR PHONE IS LISTED UNDER H.I., INC. NOW.

HI, INC. ♦ 1601 AVE. D (P.O. BOX 864) ♦ COUNCIL BLUFFS, IA. 51501
■ TUES./WED./FRI. □ NOON TO 5 PM ‡ THUR. □ NOON TO 8 PM ‡ SAT. 9/5 ■
CLOSED SUN. AND MON. ♦♦ PHONE: (712) 323-0142 ♦♦