

73 Magazine
Searchable Index
1960-2003

1379 East 15th Street
Brooklyn 30, N. Y.

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73 (Title registered U. S. Post Office) is published monthly by Amateur Radio Publishing, Inc. Executive and editorial offices at 1379 East 15th Street, Brooklyn 30, New York. Telephone: INGersoll 9-6957.

Application for entry as second-class matter is pending.

Subscription rates: U. S. A. and possessions, APO, FPO, Canada and Mexico; one year \$3.00; two years \$5.00; three years \$7.00. Foreign: one year \$4.00; two years \$7.00.

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associate editor	Jim Kyle K5JKX
associate editor	Don Smith W3UZN
associate editor	Marvin Lipton VE3DQX
contributing editor	John Campbell W2ZGU
subscriptions	Virginia K2MNV

The Cover: In the spotlight this month is the new 6DJ8/ECC88 tube by CBS Electronics, which, when applied to the front end of the Gonset Communicator (page 28), slashes the devil out of the signal-to-noise ratio.

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associate editor	Don Smith W3UZN
associate editor	Marvin Lipton VE3DQX
sales representative	Jim Morrisett WA6EXU
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COVER: W2MUM's Mosley beam as photographed by Joe Schimmel W2QDM.

73 Magazine is published monthly by Amateur Radio Publishing, Inc., 116 Main Street, Norwalk, Connecticut. Business Office, 1379 East 15th Street, Brooklyn 30, New York. Telephone: INgersoll 9-6957. Subscription rates: U.S.A. and possessions, APO, FPO, Canada and Mexico; one year \$3.00; two years \$5.00; three years \$7.00. Foreign: one year \$4.00; two years \$7.00. Application for entry as second-class matter is pending at Norwalk, Connecticut. Printed in the U.S.A. Entire contents copyright 1961 by Amateur Radio Publishing, Inc. Postmaster: Please send form 3579 to 73 Magazine, 1379 East 15th Street, Brooklyn 30, New York.

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COVER: Circuit diagram of the Central 200V transmitter. We finally got an advertised product on the cover!

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COVER: W2MUM's tower as photographed by Joe Schimmel W2QDM.

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COVER: Segment of National NC-270 Dial.

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Two meter antenna for mobile or fixed. Looks awful, works great!		
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Box 847, Reseda, California, Ph: DI 5-2077	

COVER: Couldn't think of anything so we made it bright red!

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A Tinker-Toy for Two Two meter antennas made out of aluminum tubing and a Tinker-Toy set.	William Smith K8LFI	8
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COVER: Oops!

73 Magazine is published monthly by Amateur Radio Publishing, Inc., 116 Main Street, Norwalk, Connecticut. Business Office, 1379 East 15th Street, Brooklyn 30, New York. Telephone: DE 6-8880. Subscription rates: U.S.A. and possessions, APO, FPO, Canada and Mexico; one year \$3.00; two years \$5.00; three years \$7.00. Foreign: one year \$4.00; two years \$7.00. Second-class postage paid at Norwalk, Connecticut. Printed in the U.S.A. Entire contents copyright 1961 by Amateur Radio Publishing, Inc. Postmaster: Please send form 3579 to 73 Magazine, 1379 East 15th Street, Brooklyn 30, New York.

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subscriptions	Mrs. Green
transportation	needs paint
printing	O'Brien Superban Pressers
Western Representative: Jim Morrisett WA6EXU	
Box 847, Reseda, California. Ph: DI 5-2077	

COVER: Mosaic.

73 Magazine is published monthly by Amateur Radio Publishing, Inc., 116 Main Street, Norwalk, Connecticut. Business Office, 1379 East 15th Street, Brooklyn 30, New York. Telephone: DE 6-8880. Subscription rates: U.S.A. and possessions, APO, FPO, Canada and Mexico; one year \$3.00; two years \$5.00; three years \$7.00. Foreign: one year \$4.00; two years \$7.00. Second-class postage paid at Norwalk, Connecticut. Printed in the U.S.A. Entire contents copyright 1961 by Amateur Radio Publishing, Inc. Postmaster: Please send form 3579 to 73 Magazine, 1379 East 15th Street, Brooklyn 30, New York.

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Wayne Green W2NSD—Editor, etcetera

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Western Representative: Jim Morrisett WA6EXU, 2103 India St., Los Angeles 39, Calif. Ph.: (213) NO 4-7840		
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1379 East 15th Street—Brooklyn 30, New York

Wayne Green W2NSD—Editor, etcetera

Phone: DE 6-8880

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Wayne Green W2NSD—Editor, etcetera

Phone: DE 6-8880

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Wayne Green, W2NSD
Editor, etcetera

September, 1962

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Cover: WIMEL.

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Editor, etcetera

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V-Beam..... G3BID.....	64
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73 Magazine is published monthly by Amateur Radio Publishing, Inc., 116 Main Street, Norwalk, Connecticut. Please note that the address of the business office where you are to send all correspondence, subscriptions, submitted articles, etc., is 73 Magazine, Peterborough, N. H. The telephone number is 603-924-3873 and we dare you to try to get it from the phone company. Subscription rates, while covered rather completely in the regular subscription ad, are: U.S.A. and possessions, APO, FPO, Canada and Mexico; one year for \$3.50, two years \$6.50, three years \$9.00. Foreign: One year \$4.00. Second class postage paid at Norwalk, Connecticut and at additional mailing offices. Printed in the U.S.A. Entire contents copyright, 1962 by Amateur Radio Publishing, Inc. Postmaster: Please send form 3579 to 73 Magazine, Peterborough, New Hampshire.

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Magazine

Wayne Green, W2NSD

Editor, etcetera

November, 1962

Vol. XII, No. 1

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Solid State 1296 mc Converter	W3HIX	6
Transistors on 1296? Good grief, what next? Sensitive too!		
Deluxe Your Transceiver	K6UGT	10
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Junction Checks	K2OPI	16
Quick way of making sure the junctions are still good on your transistors.		
The Continental Six	WIPYM	18
Six meters SSB with this low cost high performance transmitting converter.		
Build Your Own Mobile Mike	K5JKX	20
Transistorized mike preamplifier for more mobile punch.		
73 tests the Gonset 220 mc Communicator	W4API	24
Commercial equipment comes to the 220 mc band!		
In Defense of the Operator	W ϕ OBF/2	26
A weak defense is better than no defense at all.		
Catch All	Rodgers	28
Ha, ha.		
Of RTTY and Filters	W3TUZ	32
Book length feature.		
Premium Tube Replacement Guide	W4WKM	46
Equating all those four numbered tubes to better known tube numbers.		
73 tests the Lafayette Starflite	WIMEL	50
Inexpensive all-band rig. Eighty dollars, ninety watts.		
Complicating the Simplescope	W ϕ OPA	52
Modifications and improvements of the Sept. 1961 article.		
73 tests the Heath IM-30	W5SJN	58
Transistor analyzer kit for \$54.88 really does a good job.		
Simple Squelch	K4UWX	60
Squelching that communications receiver used with a VHF converter.		
Good Old Charlie Queen	WIQUE	64
Can this be fiction?		
Spotting Simplified	W4MLE	66
Getting those "spot" switches to really do the whole job.		
Coax vs Open Line	W9HOV	67
Coax doesn't fare so well, we'll warn you.		
Inverted Vee-Beam	W8DLU	70
Works out like a bandit. Replace guy wires with a very effective antenna.		
Choke Evaluator	Ives	72
Test equipment for the shack, not the car.		
Those Different Diodes	Staff	80
Big technical article. Rouser.		
A Good Five Cent QSO	W4MLE	90
George fights a losing battle with the lids.		
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Two Meter VFO	W6TKA	6
Very stable and uses one tube. Dandy bandspread.		
Modifying the Sixer	K4ZQQ	9
For a 50% power increase.		
Modifying the HE-45	WA2INM	10
Improving the modulation & power output meter for this nice rig.		
The Irving Hiverter 50	Staff	12
Six meter SSB converter tested at HQ by W1MEL. Works.		
Alternators	K8ERV	16
With mobile SSB coming at us in a rush we will be needing these.		
432 mc Antenna Tuner	WITQZ	18
Pictorial article.		
Auto Analyzer	Henry	20
Not very hammy. Tachometer, dwell angle meter, battery VM, temp. indicator.		
Coaxial Baluns	WA2INM	26
Open wire is the lowest loss, but how do we get from coax to open line?		
Selectivity Plus	W6EUM	28
The CW man sometimes goes to great lengths for selectivity.		
The Heath HR-20	W4WKM	36
73 tests the Heath mobile receiver.		
AM Oscilloscope Patterns	W ϕ OPA	44
You've been wondering what your scope was trying to tell you?		
Briefcase Twins	W2TBZ	50
Complete portable CW station.		
The Heath Warrior	W6EUM	60
Full kilowatt linear amplifier by Heath.		
Joe's Other World	XYL-G3NMR	66
Fiction.		
Transistorized Squelch	WITUW	74
Squelch is very handy and this circuit is so simple you have no excuse.		
The Waters Q-Notch Filter	K2CM	74
For the KWM and 75S Collins owners that want something better.		
The R-45/ARR-7	W5UOZ	86
This is practically an SX-28. Surplus conversion.		
Constant Voltage Power Supply	W4WKM	92
A real gem is available in some of those old TV sets.		

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Magazine

Wayne Greane, W2NSD
Editor, etcetera

January, 1963

Vol. XIV, No. 1

Cover: W2NSD
drawn by WIMEL

Nu 1 1/4 Meter Converter	WA2INM	6
Three 6CW4 nixistors in a sensitive 220 mc converter.		
RF Controlled Break-in	W8MQW	8
Automatic send-receive controlled by the key.		
NTSC Signal for Ham TV	K2HQY	10
Ham-TV'ers will want to read this one.		
73 Tests the WRL Tech-ceiver	Staff	18
Works fine. Six meter transceiver.		
Linear Amplifier	W6JAT	20
3-1000Z kilowatt.		
73 Reviews the PMR-8	W6FNG	26
Fine little mobile receiver by Elmac.		
Transistorized Audio Frequency Meter .	WITUW	28
No test bench is complete with a good audio freq meter, is it?		
Tale of a Dark Night	W3MFA	30
Introduction to the author.		
SSB or AM	G3BID	32
Solution: run both.		
Transistorized Mike Adaptor	W4WKM	34
Pep up weak surplus mikes with this one.		
Six Band Ground Plane	W6WAW	36
James claims that it works out just fine.		
75 Meter Transverter	WA6FPG	40
Good mobile band, simple rig and converter for car radio.		
73 Reviews the Knight-Kit T-150	K9PWT	48
80-6M, 150 watts, CW-phone, out of Allied in Chicago.		
Scopes	Staff	52
Technical article for this issue. Read please.		
The Heath Cantenna	W3UZN	62
73 gets out the can opener.		
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Magazine

Wayne Grein, W2NSD

Editor, etcetera

February, 1963

Vol. XIV, No. 2

Cover:

Paul Porcaro

and

Bob Kelly, K2VLO

6M SSB	W2NSD	10
Pros, cons, and the gear to do it with.		
432 mc Gallon	K2TKN	14
Legal now.		
Mountain Topping for Blood	K1CLL	20
An old pro doesn't answer ones.		
Simplified 8JK Beams	W6WAW	24
The twin-three really puts out a signal. Really.		
Double Sideband	W3PHL	28
DSB has some decided advantages, you might as well read this and face it.		
Crystal Oscillator	K2TKN	27
How to get the stability required for moonbounce on 1296. It ain't easy.		
Stutterless VOX	WφOPA	37
Help-p-p-ps to p-p-p-rev-v-vent sp-p-p-peach imp-p-p-pediments.		
Ballast for the NC-300	K6GVB	38
Dang things are always blowing out. Transistorized replacement.		
Modules	W5WGF	40
Pep talk on ham modulizing		
The RK-715B	K6BIJ	44
Great little inexpensive surplus tube bargain.		
The DX-40 with the SB-10	KφPGA	50
Sideband for peanuts.		
How to Build a Junkbox	Eslick	54
Take one pile of junk, some boards, nails. . . .		
Mobile Alternators	W5VOH	56
Converting six volt units to 12 volts, plus general discussion.		
73 tests the Johnson Messengers	Staff	60
Boy, are they fun!		
Station Time Panel	Ives	62
When a ham builds a clock, he really builds a clock.		
Remote Antenna Tuning Unit	W8HOA	68
Particularly valuable for mobile applications.		
Recipe for Cooked Ham	W6NKE	70
ZZZZZZZZaaaaaap!		
Cartoon	Rogers	72
Ha ha. . . . I hope. Or did your sense of humor get shot off in the War?		
A Hidden Lab	W3BNS	74
Or how to get along with a fussy wife.		
Like New RAX	W7IDF	84
Surplus gem.		
Precision Frequency Standard	W4WKM	88
Another surplus gem. A real gem too. Great.		

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Magazine

Wayne Grn, W2NSD

Editor, etcetera

March, 1963

Vol. XIV, No. 3

Cover:

Leonard Tamulonis, WIMEL

Two Meter Pre-amp	W9DUT	8	
Two nuvistors, built by a perfectionist.			
Portable Ragchewer	K6LJY	14	
Low power rig and small receiver. Eminently portable.			
Infinite Impedance Match	W6NAT	20	
New type of matching system for beams. Looks good.			
QRP Transmitter	WIMEL	22	
1S4 peanut whistle.			
Let's Regulate	W2RWJ	24	
Voltage regulated power supplies for transistor circuits and filaments.			
Amateur TV Transmitter	W ϕ RQF	28	
432 mc rig with 832A in final.			
A Six and Two Portable	K8KDX/6	32	
Complete bandswitching transceiver.			
Mode Switch for the Eico 720 and 730	W ϕ DSU	38	
Phone-CW switching system for this popular combination.			
Nuvistor RF Pre-amp	W6SFM	40	
Brings up signals on all of the less expensive receivers.			
Receiver Buying Guide	W4WKM	44	
Pictures, prices, and basic data on all postwar receivers.			
Measure L & C	K6AI	60	
Using an audio signal generator.			
Surplus Crystal Calibrator	W4WKM	66	
Real good deal. 500 kc.			
Plug-In Cans in Amateur Construction	W4WKM	68	
Those surplus cans can be used for a lot of handy building.			
CW Sidetone Oscillator for SSB Rigs	K6CYG	82	
Most of 'em have no provision for this important function.			
The Eico 723	W3UZN	84	
\$49.95 60 watt rig. Does a fine job.			
The New Look in Surplus	W4WKM	90	
A lot of new stuff is hitting the surplus market.			
Letters	12, 18, 42 Dipper	31	
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73

Magazine

Wayne Grenee, W2NSD

Editor, etcetera

April, 1963

Vol. XIV, No. 4

Cover:

Leonard Tamulonis, WIMEL

Adjustable Regulated Power Supply	W1ISI	8
Playing around with transistors? Then you've really got to have one of these.		
Diode Noise Generator	Thomas	15
Simple test instrument to tune up converters, receivers and stuff.		
Selected Circuits	W4WKM	18
Polar relay test set great for the Ritty group.		
Decibels	K1MRK	21
What they are, how to use 'em, complete with a monograph.		
Vector VFO	W7IDF	24
Simple, stable oscillator for 80 meters. Great for DX-60 and the like.		
Wee Birdcage	K3LNZ	26
Restricted space antennas are always of interest.		
Protect your Investment	W4WKM	30
How to modify your gear without disastering the resale value.		
A Survey of Mobile Transceivers	Staff	32
There are quite a few.		
Cartoon	Rodgers	49
Ha!		
Dress Up Home Made Gear	W ϕ OPA	50
It doesn't really have to look like you made it in the cellar.		
Find the Common Ground	K4ZQR	52
Some suggestions which may improve the interest of your contacts.		
Controlled Carrier Screen Modulation	K3LNZ	54
Putting it into perspective.		
Compact VFO Dial	W4WKM	56
Using turn counting dials for multi-turn coils, PTO's, etc.		
Making Etched Circuit Boards	W1ISI	58
Full instructions for a not very hard process.		
Oversight	WA2HYS	62
Simple addition of a choke which keeps dc off your antenna and you off the floor.		
All About Sideband	Staff	66
Well, almost all, anyway.		
Junk Box Station	W4MLE	70
Shows how easy it really is to build up a station out of stuff.		
The NCX-3	W2NSD	78
73 test report.		
Solving the Bird Problem	W5HJV	80
Plaintive plea for cleaner signals.		
How Low can you Go?	K4ZGM	82
Tuning from 10 to 500 kc.		
High Efficiency Switching	W4WKM	88
For that custom final.		
The SW-240	W2NSD	90
73 test report.		
Stimulus in the Space Age	W1WQH	92
Amateur telemetry mit balloons und all that, ya.		
Waters Switches	K2CM	98
For antenna switching, etc. Coax switches.		
Inexpensive Coax Connector-Adaptor System	W4WKM	102
Inexpensive and flexible way of piping small amounts of VHF around.		
Plot your Skip Zones	W9QKC	104
Do it yourself propagation system.		
One Ham in a Million!	K9AMD	106
Well, one in 350,000 anyway. Story about 5N2JKO in Nigeria.		
What is a Ham?	K7GPZ	108
Permission granted to reprint this in non-ham magazines, etc.		
The Heath HX-30	W3WTO	112
Test report submitted by 73 reader on Heath six meter SSB transmitter.		

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May, 1963

Vol. XIV, No. 5

Cover:

Bob Kelly, K2VLO

Six Meter Transceiver	K3NHI	8
Cute little five transistor hand-held unit. Parts kit available.		
6DJ8/ECC88 Converter	WA2HVK	11
Six meters down to 14 mc using really hot front end tube.		
Simple T-R Switch	W4MLE	12
For the CW man who wants full break-in without TVI.		
All Band Linear Kilowatt	W2LPC	16
Using the new Amperex 8179 you've been reading about.		
Reducing Receiver Noise	Gabus	24
Read this one, it is really important . . . no kidding.		
The Mark IV	K2HQY	30
Nice six meter rig, 6146 final.		
Multi-channel Pre-amp	W9CWG	38
Feed several rigs from one mike and preamp.		
A Challenge to the Antenna Experimenter	W4AZK	42
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Panoramic Spectrum Analyzer	W ϕ BMW	52
Build your own.		
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It's a good business too.		
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Diode Modulators	Staff	74
BIG technical article.		
73 tests the Knight-kit P2	K6UGT	80
A new SWR meter kit.		

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Knockout Punch	41	Letters, more	88

Instant 220	W2TQS	8
The AN/DMQ-2 is a snap to put on 220.		
More Selectivity for the RT-91/ARC-2	W6BJI	11
Great transceiver, covers 40-80		
PE-97A? What's That?	W4DWU	14
12 in, 250 @ 100 ma out. Just right for Twoer, etc.		
Bandspreading the BC-348	W5EUL	18
Curing one of the few drawbacks of this great surplus receiver.		
Lazy Man's Coil Evaluator	W ϕ QWY	20
Nice little piece of test gear you'll want to build. 73 Kit.		
Converting the BC-230 & BC-430	W5EHC	24
Inexpensive surplus rig which can easily cover 160-10M.		
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RT45/ARQ-1 demonstrates stripping for fun and profit.		
A Beginner's Receiver	K6JHJ	32
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Power Tuning	Ives	40
Motorizing receivers with surplus drive units.		
Beam Rotor	K1SDR	43
Putting one of those surplus motors to work.		
CW Monitor	WA2WFW	44
One transistor ten minute construction job. 73 kit, naturally.		
Antenna Relay Unit	W4WKM	46
Uses BC-442 unit from ARC-5.		
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In mobile antennas.		
Propagation Charts	Nelson	54
What bands to where, when . . . maybe.		
More Selectivity for the Twoer	K6CJN	56
Nice rig, but you have to admit that it could use some selectivity.		
The ART-26 TV Transmitter	K6MIO	58
Don't forget to subscribe to the ATV Bulletin, \$1 per six issues.		
Special Surplus Section	W2NSD	65
Thirty-three solid pages of surplus bargains. Have fun.		
A Bargain Receiver for 220	K3IUV	100
The R-48/TRC-8. Easy conversion.		
Three for the ARC	W7ATK	102
You didn't think we'd pass up some ARC-5 conversions, did you?		
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Did you?		
Still Another 2 Meter Conversion	W4WKM	106
ARC-3. Transmitter.		

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Magazine

Weighn Green, W2NSD/1

Editor, etcetera

July, 1963

Vol. XIV, No. 7

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Cubex Mark III

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Super sensitive six meter converter. Kit available.		
Chemical City TU	K8IQJ	14
One of the best RTTY converters to come along so far.		
Low Ebb in the Sunspot Cycle	K2TKN	17
"Humph, that's science ,ction," said Tom astoundingly.		
Two Banding the Swan One Bander	W8DZH	18
Cinch.		
Six Meter Transmitter	K6GKU	22
2E26 output. Kit available on terrific tuning indicator.		
Two Meter Antenna Coupler and SWR Bridge	W6TKA	32
Very important item for VHF'ers.		
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With a minimum of money and manpower.		
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Active SSB Modulators	Staff	66
Big technical article. Guaranteed understandable.		
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Do it yourselfing ammeters		
Knight-Kit R-100A	W6EUM	76
Checking out this inexpensive receiver.		
Heath Monitor Scope	W4WKM	78
Long needed product. Works.		

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Magazine

Wishy-washy

Wayne Green W2NSD/1

Editor, etcetera

August, 1963

Vol. XIV, No. 8

Cover:

Photo by Paul Porcaro

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Diode Noise Generator 73 Kit. Zener diode voltage regulated job.	K9ONT	15
Video Modulation For the ham-TV contingent.	W8VCO	16
Magic T-R Best Tee-R yet for VHF with no loss of sensitivity.	K5JKX	20
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73

Magazine

Wayne Green W2NSD/1

Editor, etcetera

September, 1963

Vol. XIV, No. 9

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Magazine

Wayne Green W2NSD/1
Editor, etcetera

October, 1963

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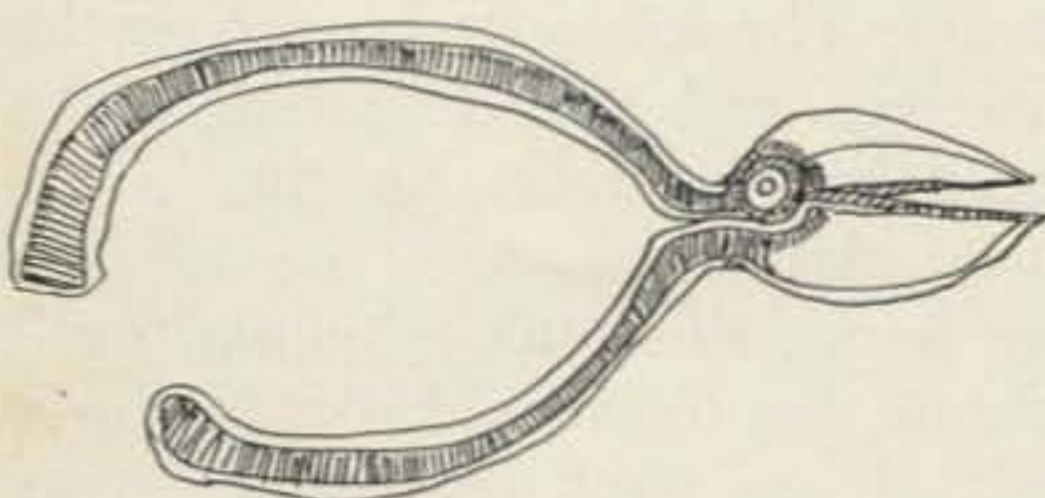
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Wayne Green W2NSD/1

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73

Magazine

Wayne Green W2NSD/1
(no relation to Joe
Green, the composer)

Editor, etcetera

December, 1963

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Wayne Green W2NSD/1

Editor, etcetera

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Wayne Green W2NSD/1

Editor, etcetera

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Magazine

Wayne Green W2NSD/1
Editor, etcetera

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Wayne Green W2NSD/1
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Wayne Green W2NSD/1
Editor, etcetera

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Magazine

Wayne Green W2NSD/1
Editor, etcetera

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Wayne Green W2NSD/1
Editor, etcetera

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Magazine

Wayne Green W2NSD/1
Editor, etcetera

August, 1964

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Wayne Green W2NSD/1
Editor, etcetera

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Letters	10, 65, 84	CB Rules	73
Cartoon	57	IoAR	61
New Products	80	Clean Contacts	81

73's Advertising Rates

	1-5 times	6-11 times*	12 times*
2 pages	\$520	\$488**	\$456**
1 page	268	252**	236**
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73

Magazine

Wayne Green W2NSD/1

Editor, etcetera

October, 1964

Vol. XXVIII, No. 1

Cover:

Wayne Pierce, K3SUK

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A Ham in the White House?	K3SUK	6
Compact Full Size 20 Meter Beam	W3PMV	10
160 Meter Transmitter	W4MLE	13
432 mc Preamp	K6MIO	18
The SJS Receiver, part II	K5JKX	26
The P&H 2-150	K6LOP	30
The 432'er Transmitter RF Section	K1CLL	32
The 432'er Modulator	K1CLL	44
The HP-23 Powers the Swan 100	K6LOP	47
Modulated Calibration Oscillator	Ives	48
Tener to Six	K6GKU	51
Varactor Tripler to 432	W6ORG	52
Blow up that Meter	W1ISI	56
City Life	WA2WYJ	62
Crystal Refrigerator	K3HTB	64
All About Noise Figure	K5JKX	66
APX-6 to 1290 mc	I1LOV	76
IoAR News	WA4PDX	87
New Amperex Tubes	WA1CCH	90
NCL-2000 Linear	W1ALU	92
Propagation Charts	Nelson	96

Editorial Debris	2	New Products	89
Heath Q-Multiplier	43	Letters	91

Wayne Green W2NSD/1
Editor, etcetera

November, 1964

Vol. XXV, No. 1

Cover:

No Cover This Month

73's Advertising Rates			
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VHF Log Periodic Beam	VE3AHU	6
SSB VFO	K9ALD	10
Color the Grommet Gone	K7IDF	12
Cartoon	B. Rogers	14
Tuneable Antenna for 432	K1CLL	16
On the Air on 432	K1CLL	18
Precision Audio Attenuator	K9QYI	22
6 meter VFO Transmitter	WA2GCF	24
Sterba Curtain for Two	W2ZBS	30
Electrolytic Saver	WØHMK	31
KWM-2 Voltage Regulator	WA4NXC	33
80-40 Vertical	WB2CQM	34
Transistor AFSK	K9MLD	36
2 Meter Mobile	W2CJN	38
Mobile Phone Patch	W2LNP	40
KWM Operating Notes	WA4NXC	44
SJS Part III	K5JKX	46
UHF Transistor Circuitry	K1CLL	48
6 Meter QRP Station	Popovich	54
Mobile Noise Limiter	KØPOX	60
Amateur Radio Operating, FCC Version	W5EHC	62
Designing Phase Shift Network	K5JKX	66
The Easy Way	K3LNZ	68
Failsafe Power Supply Control	W3CJM	70
Incremental Tuning for the NCX-3	K2DXO	72
Lawrence Modification Kit	K1TVD	74
IoAR: The Amateur Radio Position	W2DUD	76
SB-33 and MP-10	W6VAX	79
Amplidyne 621	KØCER	80
Return to the Art	K3DSQ	82
Heath Applications Series	K8AJD	84
Kentucky DXpedition		90
Propagation	Nelson	96

Editorial Claptrap	2	New Products	73
More Frequencies for the		Professional Touch	86
Drake 2B	45	Crystal Holder Tip	87
Drake 2B and Heath HO-10	75	Letters	92

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73

Magazine

Wayne Green W2NSD/1

Editor & Publisher

Paul Franson WA4HWH/1

Assistant Editor

December, 1964

Vol. XXVI, No. 1

Cover:

Merry Christmas
WA2TKY

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SSB Mobile Receiver	W3ZFJ	6
Lots of nice ideas in this one.		
Cheap pair of socks	W6NKZ	10
Simple linear using inexpensive new tube.		
28 Volt Supply	K6VNT	12
10 amps at 28 volts for \$10.		
Weather Detector	K5JKX	14
Don't let a tornado suck you up.		
14 Elements on 432	K1CLL	16
Simple yagi for 70 cm.		
Miniature Multiband Tuner	W6SFM	18
Very clever and useful.		
Bamboo Birdcage	W6WAW	22
Thanks to G4ZU and the Boomless Quad.		
Going RTTY—Part II	W4RWM	24
Part I was in January.		
Sixer to the N'th	K1GHO	26
Some small changes for operating convenience.		
Two'er Talk	W8HHS	28
These simple changes improve performance significantly.		
High Level Modulation for Ham TV	W7CSD	30
Series modulator for improved results.		
That Elusive SWR	WA6BSO	32
Why throw away those watts? By our Paramp author.		
Short Folded Dipoles	W6WAW	34
How about a 33 foot antenna for 80 meters?		
VFO Construction Techniques	W4WKM	36
Solid for stability. Like the U.S.S. Missouri.		
Two meter double sideband	W6TKA	40
The Phantom rises again.		
When Good Losers Get Together	WA5EFL	46
Non-technical. In fact, funny.		
Evaluating Receivers	K5JKX	52
Just in case you're in the market for a fancy Christmas present.		
RK 715B on 6 Meters	K2ZEL	58
Old 5D21's never die; they just turn into two quarts of rf.		
Testing the Clegg Venus		64
In case you wondered: it's tremendous.		
SSB With the 6N2	K5SGP	68
Curious, huh?		
Unit Power Oscillators	K1CLL	78
More useful UHF test gear in Bill's inimitable style.		
Repair that Mike	W4WKM	82
Fix up that old mike with an inexpensive new cartridge.		
Heath Tunnel Dipper	W3UZN	84
A very useful piece of gear.		
The Autotransformer	W1ISI	96
For maximum power supply versatility.		
Bandpass Coupler Design	K5JKX	102
Or maybe you like to twiddle knobs.		

De W2NSD	2	Crystal Hint	72
New Products	60, 89	Letters	92

73 Magazine

Wayne Green W2NSD/1
Editor & Publisher

Paul Franson WA4HWH/1
Assistant Editor

January, 1965

Vol. XXVII, No. 1

Cover: New Hampshire type Squalo mobile. Cast: Bob Cushman (Cushcraft) on left, contained in raccoon coat; Wayne Green in middle; Alrun, genuine Arabian Stallion, the pride of 73 Farms, on the right. Squalo by Cushcraft . . . winter by New Hampshire. Picture by K2YDD.

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120 Watts Mobile on Two With a well-modulated 5894.	K5JKX	6
AM, the Ham and Transistors It's not too easy to get linear modulation with transistors.	Geisler	12
Diode Controlled Break-In A very clever scheme for easy clean switching.	VE2AUB/W5	16
Calibration and How to Get It By one of the greatest hams.	K6BJ	22
Tuned Feeders Forever Nasty black snake . . .	W5DWT	24
Pegboard Panacea Clean up your messy workshop.	K6UGT	27
Low Cost GDO For those of you who don't like transistors.	W7CJB	28
Transistor Amplifier Design It's not hard at all.	K5JKX	30
Heath Antenna for UHF Bet you didn't know that it's good on 432.	K6MIO	34
I'd Like to See All sorts of clever inventions.	W2LLZ	36
Ham X-Word Wear out your brain.	WA2BWQ	37
Conelrad, No; EBS, Yes! Simple monitor for your local BC station.	K3RKX	38
Automatic Load Control If you're on SSB, you need ALC.	K5JKX	40
Solid State Noise Clipper Simple way to get rid of that racket.	K6MVH	48
Take Full Advantage of your Halo Simple gadget for easier matching.	WA2DJU	52
Is Your Investment Protected? Insure your expensive gear.	K9UTN	56
Converting the RDZ Receiver From 400 to 60 cycles.	K1VDX	66
So We Bought a Spiralray And found a lot of interesting features.	WA4EPY	68
Two'er Linear To give you more practical information on inexpensive linears.	K1CLL	70
40 Watt DC-to-DC Converter It operates on 6 volts and uses a common transformer.	W3UWV	76
Heath SB-200 Very nice.	WA2TDH	78
How to Fish for DX From a ham who ought to know.	5Z4ERR	82
Propagation Conditions aren't too bad . . .	Nelson	92

De W2NSD	2	Quiz	65
Cartoon	21	New Products	86, 88
Front End Hint	45	1964 Index	92
Letters	60, 62	Caveat Emptor	94

73

Magazine

Wayne Green W2NSD/1

Editor & Publisher

Paul Franson WA4HWH/1

Assistant Editor

February, 1965

Vol. XXVIII, No. 1

Cover by K3SUK

The Ham and TVI	WA6OQP	6
With clever cartoons by K3SUK.		
Coffee Can VXO for Oscar III	W7SMC6, W6HEK	10
Be ready for QSO's to Europe on two.		
Transistor, Hi, Hi	K6QKL/KH6	11
A few interesting notes on Nipponese transistors.		
Multiband Vertical Antenna	W3UWV	12
A simple high frequency antenna for hams with space problems.		
Let's Go Ham TV	K3DSM	18
The details of getting on the air.		
Solid-State SSB Power Supply	W1VIV	24
With some vital information as well as construction details.		
Handy Dandy Zeners	WØGJB	28
An interesting article in spite of the title.		
Cooling Notes on the 4-1000A	W6VFR	30
Keep it cool for long life.		
120 Watts on Two: Part II	K5JKX, W5PPE	32
The first part of this fine mobile rig was in January.		
More on That Simple TR Switch	W4MLE	38
Published in May 63.		
The Disguised Twist	WA6LUM	40
A V-H beam for 2.		
The Backward-Upside-Down Halo	WA4INJ	44
Unconventional mounting for improved results.		
VHF-UHF Mixers	K1CLL	46
Detectors and mixers using helices, strips and semi-cavs.		
UHF Signal Generator	K6MIO	52
A generator for 432 and 1296.		
Just a Piece of Wire?	K5BLF	56
For VHF constructors.		
The Ham and CD Emergencies	W5CZ	58
Are you doing your share of PS?		
Brussels International Mobile Rally	G3BID	62
See what fun reciprocal licensing can be?		
The Callbook Game	WA2TDH	66
It doesn't take much imagination to extend this one.		
Plate Modulation with Controlled Carrier	W5EHC	68
Interesting idea from a great 73 booster.		
Audio Bandpass Filter	Hansen	70
Something for the CW ham.		
Correcting Errors in the "Errorless RTTY Converter"	K5JKX	72
Fine title, that.		
The Swan 350	WB6KEH	82
A fine new piece of gear.		
The Lafayette HE-45B	K3VHK	84
For inexpensive 6 meter contacts.		
The SB-33 on AM	W7LIA	90
The title is self explanatory.		
Caveat Emptor		92
Have you sent in your ad this month?		
Propagation	Nelson	96
With something new.		

De W2NSD/1	2	New Products	74
That Professional Touch	23	New Literature	77
Questionnaire	64	Letters	78
Ad Index			94

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3

Magazine

Wayne Green W2NSD/1

Editor & Publisher

Paul Franson WA4HWH/1

Assistant Editor

March, 1965

Vol. XXIX, No. 1

Cover by WA2TKY

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Dual VHF Converter	W9DUT	8
Combination 144/220 mc Nuvistor converter.		
Two Band Collinear Antenna	W7CSD	10
For 40 and 15 meters, by George.		
The Parametric-Transistor Multiplier	W6GXN, W6QUD	12
A new development in electronics of great interest, no doubt.		
Improving the Garden City TU	W7CJB	16
Don't let the title fool you; its a complete TU, whatever <i>that</i> is.		
The Ham	Pirola	22
Don't miss this one. It hurts. Illustrated by K3SUK.		
Oscar III Orbit Computer	W7SMC/6	20
Be ready for the bird to fly.		
Converting the CB-1 to Six Meters	WA2INM	26
Don't let those old CB rigs go to waste. Most are.		
The Big Bang	W4BV	28
A g.g. 813 linear.		
A Better Converter	WAØHQA	32
Six meters, four transistors, two conversions.		
Hints for Microwave	K7ZFG	34
To inspire you to get to work.		
A New Power Tube	W1KSZ	36
The 8236 in an AM modulator. The tube is good for SSB, too.		
Hybrid 432 mc Exciter	W9SEK	38
Get on 3/4 meters with only two tubes and a varactor.		
$\frac{5}{8}$ Wave Vertical for Two	K4DJG	42
For people who live in backward, vertically polarized areas.		
Printed Circuits-Almost	W3ITO	44
An effective method of attractive construction.		
Scope Pix Trix	K6UGT	48
Take pictures of your scope traces.		
Easy Higher Power	K9FWF	50
Using the 6146B.		
AC Transceiver Supply	K4PNJ/4	52
Our SSB power supply for this month.		
Understanding Mixers	W6BUV	54
You won't understand this article.		
Electronic Antenna Control	WA4GTA	60
Or how to point your beam the way your indicator points, or something.		
DC'izing Scope	K5JKX	62
Just what you've always wanted.		
The Missing Link	K9AMD	66
A short discussion of the many troubles that beset our readers.		
El Toro	W7OE	68
Mosley's limited space antenna that you can use anywhere.		
Heath GR-64	W3UZN	72
Every ham should have a general coverage receiver. Here's a good bet.		
Understanding Schmidt Triggers	K5JKX	74
If you want to understand Schmidt triggers, this is a good article for you. You probably don't.		
Waters Mobile Antenna	W2NSD/1	79
As used on the black behemoth.		
UHF Dummy Load	K1CLL	82
More UHF experimentingistic gadgetry.		
Improved Halo Mount	K3JZH	84
Fine for hams who send their cars to car washes instead of having the XYL do it.		

De W2NSD/1	2	Caveat Emptor	92
SX101 on SSB	25	Ad Index	94
IQ Test	73	Propagation	96

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73

Magazine

Wayne Green W2NSD/1

Editor & Publisher

Paul Franson WA4HWH/1

Assistant Editor

April, 1965

Vol. XXX, No. 1

Europe on Two?	W7SMC/6	3
Get ready for Oscar III.		
Letter from Gus	W4BPD/AC5H	4
Beginning 73's monthly letter from the DX King.		
1 KW PEP	W9EWL/Ø	6
811's in a small box.		
6 Meter Heterodyne VFO Transmitter	K1CLL	10
A simple, stable, easy-to-build transmitter from Bill.		
Kostless Keyer	W8MQW	14
Well, maybe not kostless, but klose to it.		
Double Hula	K2ICF/6	16
A small new antenna. Looks like a halo, but good for HF.		
Propagation	Nelson	20
Looks like an interesting month		
Special SSB Transceiver Section		22
All the dope on all the HF SSB transceivers.		
IoAR News	WA4PDX	32
What's new with the Institute.		
Versatile Code Monitor	W8GXU	34
Transistorized with p.c. board, yet.		
432 mc Noise Generator	W6GXN	38
So you think <i>your</i> converter has a noise figure of 3 db?		
KWS-1 on VHF	W4API	44
It adapts easily for use with transmitting converters.		
Amateur, Spare that Meter	W8BPY	48
And a chuckle with K3SUK.		
Transistor RF Power Amplifier Design	WA2DJU	52
This month's technical article is a first in the ham field		
Some Worthwhile Seneca Modifications	K6VNT	56
To improve its fine performance.		
Two Meter Low Noise Transistor Converter Rohde		62
From our European correspondent.		
A Novel AFSK Oscillator	K8ERV	66
For the VHF RTTY'er.		
Signal Generator for VHF and UHF	K1CLL	70
You'll have to turn to page 70 for the real title.		
Converted Converter	W3ZPJ	74
Turn that old converter into a receiver.		
73 Tests the Galaxy V	W2NSD/1	78
And is happy with it.		
Unusual Philological Diversion	K2PIJ	80
Sometimes known by other names.		
Caveat Emptor?		92
Send in your ad now. CE works!		

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De W2NSD/1	2	Marsy SB-33	46
KWM-1 on LSB	45	New Products	55
High Power Swan 240	46	Letters	64, 82

Wayne Green W2NSD/1

Editor & Publisher

Paul Franson WA1CCH

Assistant Editor

May, 1965

Vol. XXXI, No. 1

Cover by Barry Ober K2YDD

ADVERTISING RATES

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2"	37	35	33
1"	20	19	18

Roughly, these are our rates. You would do very well, if you are interested in advertising, to get our official rates and all of the details. You'll never get rich selling to hams, but you won't be quite as poor if you advertise in 73.

432 mc Converter	K6MIO	6
Easy-to-build converter to get you on 70 cm.		
A New Approach to Phasing	W8HXA	12
Not <i>all</i> SSB transmitters use filters, you know.		
The Big Bomb	WØSYK	18
Runs a gentleman's gallon.		
Two for Two	W6TKA	22
Some antennas for our western hams.		
The Trouble with Fred	Margolis	26
A fetching tale illustrated by K3SUK.		
A Versatile Oscilloscope	WØOPA	30
Every ham needs a scope. This one does a lot, but doesn't cost it.		
Constant Gain Audio System	Pullman	36
Pretty clever. Take a look.		
A Cool KW	K5YWJ	38
Another approach to the inexpensive power supply.		
Beer Can Cavities	WA2INM/1	40
For use on two. Low noise transistor converter included.		
Four Element Rhombus	K2IRK	44
Yeah, that's right.		
Power Decade Resistor	Lyman	48
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Wayne Green W2NSD/1
Editor & Publisher

Paul Franson WA1CCH
Assistant Editor

June, 1965

Vol. XXXII, No. 1

A VFO with FSK Provisions	W6TKA	18
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The ideal match for a transmitting converter.		
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An Imperial Gallon.		
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1"	20	19	18

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Magazine

Wayne Green W2NSD/1

Editor & Publisher

Paul Franson WA1CCH

Assistant Editor

July, 1965

Vol. XXXIII, No. 1

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A Two Meter Transistor Transceiver	I1SLO	6
To give you a little encouragement to go portable on VHF.		
A Simple Two Meter Collinear	W5GVE	14
Build your own CushCraft collinear.		
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The last tube converter Hank built, but a good one.		
Reviewing the CushCraft Squalo	WA2ZCH	20
It works.		
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You might call it a forest of 5763's.		
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Get yourself a respectable signal on the band.		
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Translation: Code Practice Oscillator-CW Monitor.		
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Converting the Swan Monoband to Two	K9EID	52
A bargain two meter SSB transceiver.		
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Magazine

Wayne Green W2NSD/1

Editor & Publisher

Paul Franson WA1CCH

Assistant Editor

August, 1965

Vol. XXXIV, No. 1

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Put those miscellaneous meters to good use.		
The EHS Portable Dipole	W9FQN	16
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And some interesting ideas in a 8072 linear.		
Simplified Solid State	WA2INM/1	24
Simple, easy-to-use, practical ham transistor circuits.		
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It's easy—and very useful.		
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Another Way to Measure Noise Figure	K5JKX	44
Hmm. What's the other way.		
The Big Sail	K6MIO	50
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Here's a use for those tubes you were going to use for lamp bases.		
Quick and Easy Add-on Neutralization	K1CLL	72
In case, unlike most hams, you don't plan ahead.		
Polar versus Solar Beam Orientation	W6TAQ	74
Personally, I use my Boy Scout compass.		
Parallel Resistance Nomogram	WA2BWQ	76
Now all you have to do is find this article when you need it.		
An RF Amplifier for 432	K1CLL	78
Not exactly a 3 db noise figure, but . . .		
The National HRO-500	W2NSD	80
Sigh.		

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73 Magazine

Wayne Green W2NSD/
Editor & Publisher

Paul Franson WA1CCH
Assistant Editor

September, 1965

Vol. XXXV, No. 1

ADVERTISING RATES

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73 Magazine

Wayne Green W2NSD/1
Editor & Publisher

Paul Franson WA1CCH
Assistant Editor

October, 1965

Vol. XXXVI, No. 1

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A fantastic new piece of gear.		
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73 Magazine

Wayne Green W2NSD/1
Editor & Publisher

Paul Franson WA1CCH
Assistant Editor

November, 1965

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We keep telling you that tubes are obsolete.		
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Sure beats those orange crates for mounting.		
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Six Meter Transmitting Converter	KØAHD.....	62
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Evolution of an Antenna Tower, Florida Style	K4FQU.....	88
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73 Magazine

Wayne Green W2NSD/1
Editor & Publisher

Paul Franson WA1CCH
Assistant Editor

December, 1965

Vol. XXXVIII, No. 1

Cover by Wayne Pierce K3SUK
Cover II by Ray Sax WA2TKY

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Solid State 432 Exciter	W9SEK	6
Puts out 8 watts on 432 mc. A ham scoop.		
8058 Nuistor Preamp for 432 mc	I1LOV	10
Complete plans and layouts.		
UHF-VHF Dipper	WA1CCH	11
50 to 500 mc with no work.		
Transistorized FSM	W1JL	14
Printed circuit board available for this one.		
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Ho, ho, ho! It's that time again.		
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Build a Q meter and impedance bridge.		
A New Two Meter Heterodyne Exciter	WA2JAM	28
Use a suppressor balanced mixer to get on two.		
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A Regulated Solid State Supply	W9SEK	34
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Transistor Twenty	Scott	38
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Frame Your Awards	W7OE	40
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The Solid State Slippery Six	K1CLL	50
A transistorized heterodyne VFO.		
A Crystal Controlled Front End	K1QIM	52
Put that old preselector to work.		
Field Effect Transistor Primer	WA6BSO	54
Another ham scoop. FET's are mighty useful.		
A Doll for Serifina	W7IDF	66
Reminiscences of an old ship sparks.		
Build a 4-1000A Socket	W7CSD	70
The tubes can be cheap, but the sockets!		
An Audio Frequency Standard	K8ERV	72
Transistorized, of course.		
A Bumper Mount for "Impossible" Cars	W7SMC	78
If one won't do it, why not use two?		
Gus: Part VIII	W4BPD, etc.	84
Gus descends on Lebanon, Egypt and the Seychelles.		
Two through Twenty Field Strength Meter	W7OE	90
Tunable and transistorized, too.		
A Low Power Standby Transmitter	W7CSD	104
AM on HF?		
The Full Wave Tripler Myth	W6LWE	100
We don't like to rush things.		
The Three-in-One Birdcage Beam	ZS3NZ	110
For 10, 15 and 20.		

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73 Magazine

Wayne Green W2NSD/1
Editor & Publisher

Paul Franson WA1CCH
Assistant Editor

January, 1966

Vol. XXXIV, No. 1

Cover by Ray Sax WA2TKY

The Space Monitor	W9DUT, W9JFW	6
Now, here's a real construction project . . .		
A Unijunction Keyer	WA6TSA	12
Build a modern keyer for less than \$20.		
Two-Element 20 m Vertical Array	W6TKA	16
Get 3 db gain and 15 db front-to-back ratio.		
They Said It Couldn't Be Done	WA2YTK	18
What? A female build a rig??		
Simplified RF Measurements	WA6BSO	20
Measure impedance and power easily.		
A Six Meter Peanut Whistle	WA2INM	24
Every ham wants a walkie-talkie; here's Larry's.		
A Visit to the CN8's	G3BID	28
Edgar tells a little about his trip.		
The Pot Box	K6UGT	32
Any experimenter needs one.		
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Good for SSB and AM, too.		
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The first intercontinental ham QSO.		
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Need a 10 microammeter?		
The Twixer	WØHMG	46
Add six meters to your Two'er.		
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Maybe that power blackout was caused by a mad ham . . .		
Assembling the Sideband System	K5JKX	54
The conclusion of our SSB series.		
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Agalega, here I come!		
Build the OTC	WA4SAM	74
A one transistor converter for VHF. Build one.		
The Eico 753K	W3KET, W3TND	76
Eico's really scooped with this one.		
The Drake R-4 Receiver	WA2TDR	78
A very versatile receiver for your money.		
73 Tests the Knight C-577	WA1CCH	80
Audio compression works.		
VFO Stability: Part II	W1KNI	82
Transistors are better than tubes.		
73 Tests the Coveya 6	WA1CCH	84
Heh, heh. The neighbors don't know it's for six.		
Twelve cm Heathscope	W7IDF	86
It's the Heath IO-12.		
The 1215 Transistor Superhet	K1CLL	90
Part II, the local and other oscillators.		
Vibrator Checker	WA1CCH	95
It's a stupid subject, if I say so myself.		
Low Noise UHF Transistors	W1OOP	96
Don't read this if you're a tube man. It'll make you cry.		
IoAR News	W7ZC	98
News from the new IoAR Secretary.		
What's Your Mobile Strength?	W9NTP	102
Simple FSM adapter for your car antenna.		
Why Instruction Books?	W7OE	106
Why indeed?		
Improve the NF of Old Receivers	WA4EPY	108
Soup up the ol' hearin' aid.		

ADVERTISING RATES

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73 Magazine

Wayne Green W2NSD/1
Publisher

Paul Franson WA1CCH
Editor

February, 1966

Vol. XLV, No. 1

An 8163 Linear	W6OVW	6
An all-band 2 kw linear.		
And Then There's Phasing SSB	WA6KLL	10
Discussion and a simple practical exciter.		
Better Selectivity for Your Transceiver	Roanhaus	16
CW selectivity makes CW operation easier.		
A Crystal-Controlled Front End	W1QIM	20
Stable high frequency reception on your old receiver.		
The Key to Peaceful Coexistence	K6MVH	22
Between six meters and channel two.		
Breadboarding	W2DXH	24
Excellent discussion of experimenting.		
Noise Considerations in a preamplifier	WB2EGZ	28
Necessary information for UHF hams.		
Transistor Receiver-VU Style	VU2NR	30
Scrounging wins!		
The Astro Ten	W3YZC, W3IXL	34
Simple ten meter transmitter-converter for mobiling.		
Improving RTTY Reception	W4EHU	38
Good hints for the teletype fan.		
Quick and Easy Bias Supplies	K5JKX	42
Steal a little bias without fuss.		
A Word about Crystals	KØJXO	44
And not an encouraging one, either.		
The Design of Parabolic Reflectors	K3PBY	46
Now, how do you make them?		
Transistor CW Adapter	W5JSN	50
Especially for the SB-33.		
Give and Take	W2AAA	52
History of international radio conferences.		
The Zero Meter Band	WA2TDH	58
A bit of fine fantasy.		
Automatic Tuning for the ARC-5	W4WKM	62
This one's a real thriller.		
Boosting Talk Power	K2IKZ	64
In ALC type transmitters.		
Seeing Your SWR	K5JKX	66
Clever scheme for antenna work.		
The 1215 Superhet: Part III	K1CLL	74
The final article: if, af and assembly.		
Put Your SB-33 on CW	WA6PGA	78
A scheme totally unlike that on page 50.		
73 Tests the Tunaverter	WA1CCH	80
A quick look at a tunable transistor converter.		
How to Be a First Class Lid on Phone	WA5DEL	82
Without really trying.		
Some Ideas on Noise-Free		
CW Reception	K4DAD	84
Why listen to all that trash?		
The Crystal Decade	W4ATE	90
Full frequency coverage with crystals.		
Hero of Ham Bands	K9AMD	96
Deke put Nokomis on the map.		
Amateur Frequencies	Schmeling	98
Wonder where forty went?		
Semi-Modernizing Vibrator Power		
Supplies	W6TKA	102
Get more power from those old vibrapacks.		
Use Your GDO and Z-Meter	WØBMW	104
They're very useful, as this article indicates.		
The Care of Storage Batteries	W5SOT	108
At least lead-acid types.		

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73 Magazine

Wayne Green W2NSD/1
Publisher

Paul Franson WA1CCH
Editor

March, 1966

Vol. XXXVI, No. 1

Cover by Bob Taylor.

Circular Polarization	K6MIO	6
Use CP for moonbounce, trop, and OSCAR.		
Solid State Sixty	K3LCU	12
A 60 watt regulated power supply for and with semiconductors.		
Crystal Oscillators	W6GXN	14
Tube, transistor and FET. This is a good one.		
Slaying the Monster	WØEDO	18
Or: Why fear TV?		
Diary of a DXpedition: VP2VD	K4IIF	20
So you think it's just a matter of sitting by the pool and operating?		
Unmodifying the S-38	WA5MCU	26
Have you ever met a ham who hasn't had an S-38—once?		
Vector Vector	W2DXH	28
Vector boards are sure useful.		
Cathkey	K2UOC	32
Is this the simplest automatic keyer?		
All Solid State	W1OOP	34
Another interesting one from one of (y)our favorite authors.		
QSL Here is Homebrew, OM	WA2ZKR	36
Homebrew QSL's?		
The 88¢ Varactor	WA6BSO	38
Who says they're all expensive?		
12 Volt Beetle Juice	DJ2UL	48
Even the Fastbacks are 6 volts. Rah for VW.		
The HD-10	W2JDL	50
Heath's new electronic keyer.		
Solder and Soldering	K4CPR	52
Make your soldering stick.		
The Rhombic Antenna	WØSII	54
A round-up of information on these almost-legendary antennas.		
The Vocap Tester	WØBMW	60
Here's a tester that sings at you.		
The Feedline Argument	WØOPA	66
A little more fuel for it.		
Letter from Jail	W6GTC/jail	70
Stuffy readers: skip this.		
Improving the HX-20, HR-20 and HP-20	KØLFA	74
Who could improve on this title?		
The Walky-Nosy	K6EDX	78
A portable emergency communications receiver.		
Our Friend, the R.I.	W7IDF	82
Maybe a little more appreciation of the FCC is called for.		
Those Good Old Ham Bands	W7ZC	88
They're getting mighty thin.		
Low Pass Audio Filters	K5JKX	90
The full story, he says.		
Gus: Part 10	W4BPD	98
I think I'll take a plane and leave the bus to Gus.		

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73 Magazine

Wayne Green W2NSD/1
Publisher

Paul Franson WA1CCH
Editor



April 1966

Vol. XXXVII, No. 1

Cover by Wayne Pierce K3SUK.

ADVERTISING RATES

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Barefoot and All That Jazz	W7IDF	6
Ken gets us in all sorts of trouble . . .		
Six and Two Amplifier	K1CCL	8
Medium power, bandswitching, simple.		
The Bee Eliminator	W8VVD	14
No more antenna bees with this set-up.		
The Six Meter Jewel	K3PXT	16
A complete 50 watt six meter AM transmitter.		
Ascendency Curve Yagis	K6EDX	20
Author Cooper discusses yagi gain, etc.		
The Uhfut	WA1CCH	26
A multipurpose UHF unit.		
Homebrew Permeability Tuned VFO . .	W4VRV	30
It's simple, stable and cheap.		
Receiver VFO Controlled Transmitter . .	K6REU	34
Perfect for the CW man.		
The Matchmaker Circuit	WØOPA	38
Some ideas on automating your antenna.		
Six to Two Transmitting Mixer	K9EID	40
Yep, another one.		
1250 mc Slotted Line	WA8CHD	42
Find your frequency, SWR, impedance, etc.		
A Short Look at Propagation	J. H. Nelson	46
By our propagation expert.		
Diddleboxes	W2DXH	48
A new approach to decade-substitution boxes.		
Modernize Your Philco Converter	W1OOP	54
Or build a modern new 432mc converter.		
Magnetic Beaming	W2OLU	58
Not all magnetically deflected tubes make pix.		
Vertical Antenna Band Changing	W7BWB	60
Control your vertical antenna remotely.		
Choosing IF and Mixer Frequencies . .	WA6BSO	62
So that you don't get birdies.		
Mobile Burglar Insurance	WA6UYS	66
Honk—Honk—Honk—Honk—Honk—Honk—Honk—		
A Look at Antennas for DX	K6ZGQ	68
A very interesting article. Vital for DX'ers.		
Some Should Do Something About	K3BNS	74
A careful analysis of club activities.		
The Tranx Circuit	K7VMV	76
Switch your linear with no transceiver modifications.		
Practical Double Sideband—1966 . . .	VE7BBM	78
Some discussion of how to get DSB.		
Two Buck Monitor	WA6KLL	82
Cheap and simple CW monitor.		
Controlled Audio AVC	EI4R	84
Excellent AVC for CW or SSB.		
One Way Dual Battery System	WAØAIY	86
No more dead batteries.		
A Dynamic Mike at Low Cost	Genaille	88
Build your own mike.		
Diversity the Easy Way	WA2MBT	92
Improve your reception with two antennas.		
SSB and the NC-300	W6HOG	94
Better AGC, BFO and product detector.		
Gus: Part 11	W4BPD	102
See what Gus is up to this month.		
Little Annie Hammy	K3SUK	124
Sorry about that, Harvey		

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73 Magazine

Wayne Green W2NSD/1
Publisher

Paul Franson WA1CCH
Editor

Jack Morgan WØRA
Advertising Manager

May 1966

Vol. XXXVIII, No. 1

Cover by Wayne Green W2NSD.

New VHF Circuits for Transistors	W6AJF	6
6 m converter and filter from Frank Jones.		
RF Applications of N-Channel FET's . . .	WA5KLY	12
Very important article; a 73 scoop, of course.		
Size is Impressive	K3VMZ	14
A little humor to brighten the day.		
FSK Principles	W4EHU	16
How to transmit RTTY on HF.		
VHF-UHF Panoramic Reception	W5NPD	20
Now you can watch that empty band . . .		
UHF Grid Dipper	WA6BSO	24
Excellent dipper—even if it does use tubes . . .		
PY2USA	PY2CUB	32
Fostering good relations through ham radio.		
W2USA/TV	W4DKJ	34
Good publicity for hamming at the '39 World's Fair.		
12 volts on 6 meters	K8ADG	38
Ed doesn't like semiconductors, I guess.		
432 the Easy Way	WB2FYB	40
Cheap, too.		
Dealing with the Information Explosion	W2DXH	42
In a bloodthirsty way.		
Regulated DC-to-DC Converter	W6GXN	46
Put in 6 to 24 volts and get out 12!		
How Much Capacitance for that SSB rig?	W4VRV	50
Beat the high cost of microfarads.		
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A simple, inexpensive regulated power supply.		
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An interesting sketch of history.		
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A very thorough article.		
Why Work the World Now?	W4BPD	78
Complete rules of 73's new WTW DX certificate.		
A Private Listening Speaker	K5BEC	80
For mobilizing.		
A Solid-State Product Detector	W6GXN	84
The semiconductor answer to pentagrid mixers.		
HW-22 on CW	W7UXP	88
Takes about 10 minutes, too.		
Transistor Power Supply	WA2TOV	90
Simple, quick and cheap.		
Ham with a Heart	K7NZA	92
K7SML, a multiple sclerosis victim.		
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What fuse to use where.		
Confession	WØHMK	96
An SF thriller.		
Low Voltage Gonset Super Six	WØBMW	100
Throw away that HV power supply.		
HX-50 on MARS	K9CZI	104
Very simple procedure.		
Improving Der Kleiner Keyer	W4BRS	106
A few corrections and improvements.		
More Contacts from Within	K3RXK	108
Simple indoor antennas for high frequency use.		
For Those Who Have Given up Code	WA8BJK	110
Encouragement for novices and technicians.		

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73 Magazine

Wayne Green W2NSD/1
Publisher

Paul Franson WA1CCH
Editor

Jack Morgan WØRA
Advertising Manager

Jim Fisk WA6BSO
Technical Editor

June 1966

Vol. XXXIX, No. 1

The Micro-Ultimatic	W1CFW	6
73 scoop: integrated circuits in a high-performance keyer.		
A Transistorized Scope	K8ERV	14
Another ham scoop: use transistors for deflection amplifiers.		
50 watts on 50 mc for \$50	K1CLL	18
This project should prove popular.		
Two meter Transistor Converter	W6AJF	24
Cheap, simple and works well.		
220 mc Transistor Converter	W6AJF	30
Grounded emitter or grounded base, too.		
432 mc Transistor Converter	W6AJF	34
Four 50¢ transistors give you a 4 db converter.		
Standard Time and Frequency		
Transmissions	W6JTT	38
What time did you say it was?		
A Simple Two-Tone Test		
Generator	WA6BSO	42
Find out your true power output in PEP.		
BC-348 Crystal Filter	K2ZZF	46
Improve the filter in your BC-348.		
APA-2 Preamp for Two	W5LTR	48
Of course, a transistor works better, but . . .		
Modernizing an SCR-522	WA6BSO	50
That's what I need: a modern SCR-522.		
The First and Last Q-5'er	White	60
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The Stoner RT-1 RTTY		
Converter	WA6BSO	64
A transistorized RTTY receiving adapter.		
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Marry a RDZ to a Standard Coil tuner.		
Gus: Part 12	W4BPD	68
See where our South Carolina boy is now.		
Surplus Conversion Guide	WA1CCH	74
Find out where to find that conversion.		
220 mc Receiver from the		
ARC-27	K3CES	78
A good use for the guard receiver.		
BC-453 Series Receivers	K1EUJ	82
The simplest conversion.		
Do You Want a Law Suit?	W7OE	96
\$100,000 is a lot.		

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73 AMATEUR RADIO

JULY 1966
Volume XXXX, Number 1

MARS HF Mixer and Amplifiers	WA4KIH	6
Also good for putting your triband rig on 15 or 10.		
Two Element Weeping Willow for 15	WA8MVR	12
Perfect for novice Dx'ers.		
Frequency Measurements for Hams	W6BLZ	14
Receive VLF, too.		
VHF Parametric Transistor Multiplier	W6GXN	20
Experimenters must read this one. A scoop, of course.		
How to Get Your Extra Class License	W5TOM	26
Here's the easiest way to do it.		
A Transistor Analyzer Using FET's	K3LCV	30
It checks h_{11} , h_{12} , h_{21} and h_{22} .		
A Field Effect Voltmeter	K3LCV	34
Here's a real transistorized VTVM: 22 M input resistance.		
An FET Audio Compressor	K3VNR	38
Use FET's for high input impedance.		
The Kindly Keyer	WB6AIG	46
This IC keyer uses a commercial PC board.		
Save That Transistor!	K9VXL	50
Defective transistors as zeners and varactors? Sure!		
Lambda Lines	W2DXH	54
Scraps of twinlead a make good lecher lines.		
Designing Transistor RF Amplifiers	Thorpe	58
Good info for the serious experimenter.		
A 75 Watt Twoer Linear	K1CLL	66
It uses Bill's favorite Compactron.		
A Better Sideswiper for Electronic Keyers	W6BLZ	70
Your cat will like this one.		
Replace Your 811 's with 572B's	WB2EPG	72
The right way.		
UB5UG's Five Band Vertical	W8FAZ	74
It's pretty clever--and simple, too.		
Don Miller DXploring		76
The life of leisure on a lush tropical island.		
Gus: Part 13	W4BPD	78
Gus keeps rolling along.		

SPECIAL BOOK FEATURE

Coaxial Cable Handbook	WA6BSO	93
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Wayne Green W2NSD/1
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August 1966

Vol. XXXXI, No. 1

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More Power on Six	WA9IGU	6
Drive this linear with your AM or SSB exciter.		
James Dandy Mixer	W2DXH	12
A very simple—yet useful—test instrument.		
A Poor Man's 220 Transmitter	WB2EGZ	14
It puts out half a watt; good for local work.		
Another Solid State 2 M Transmitter	VE2DG	20
With very inexpensive transistors.		
The Mini Monitor	W3UZN	22
Every ham should have one.		
Audio Test Amplifier	W9SEK	24
This is very useful, too.		
The Chicken Method	K4ZZV	26
But aren't we all chicken?		
A Tubeless VFO for VHF	W1DFS	28
An old idea, but a good one.		
A Toroidal Multi-Band Tuner	W6SFM	30
MBT's have hundreds of uses.		
The 220'er	K3LNZ	34
Here it is: A conversion of the Twoer to 220.		
The Perfect Squelch	W5VCE	36
Very simple tone-control squelch.		
A Digital Readout VFO	WA9AXX	38
It's linear within 2 kHz and designed for 5-5.5 MHz.		
A 50 kHz Calibrator	W6GXN	42
Fine for those old surplus receivers.		
Junk Box Preamplifier	WA4ZQO	46
Perk up your old receiver at no cost.		
The Heath SB-100	K2EQB	50
Heath's new HF transceiver works very well.		
High Frequency Power	WA6NIL	54
Don't throw away that 400 Hz generator!		
Tech Schools for Ham Training?	WØRA	58
They're good for commercial training, too.		
The Knight TR-106 and V-107	WA1CCH	62
Knight's new 6 M transceiver and VFO make a nice pair.		
A Curtain Going Up	W2EEY	66
Why not use a Bruce curtain and work more DX?		
Another Look at the Like-New Circuit	W2DXH	72
A few changes make this good circuit even better.		
Gus: Part 14	W4BPD	76
Gus goes to Aldabra—and around the U.S.A.		

SPECIAL BOOK FEATURE

Coaxial Connector Handbook	WA6BSO	93
Part two of WA6BSO's series on coaxial systems discusses the types and uses of coax fittings.		

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73 Magazine

Wayne Green W2NSD/5Z4
Publisher

Paul Franson WA1CCH
Editor

Jim Fisk WA6BSO
Technical Editor

Jack Morgan WØRA
Advertising Manager

September 1966

Vol. XLII, No. 1

Our cover this month is by Sidney Willis of Bennington, N.H. Sid is a well-known artist who specializes in still lifes of objects associated with Old New England; he has won a number of gold medals at N.E. Art Shows.

ADVERTISING RATES

	1X	6X	12X
1 p	\$298	\$281	\$264
1/2 p	155	147	139
1/4 p	80	76	72
2"	42	40	38
1"	23	22	21

No extra charge for second color (red, usually) or bleed on full page ads. If you're interested in advertising to hams, get our full rate card and other information from Jack Morgan WØRA.

Compact Six and Two Transmitter K6RIL	6
Here's a very clever 60 watt rig; easy to build, too.	
Poorboy Mark II Quad K4USK	14
A simple, light, three-band quad.	
5dB Gain on 75 m Mobile W3BTQ	20
Increase your mobile signal at low cost.	
Accurate VHF Frequency Measurements W5WGF	22
Use your BC-221 for high accuracy on two meters.	
Add SSB AGC to Your Receiver W1OOP	26
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73 Magazine is published monthly by 73, Inc., Peterborough, N. H. 03458. The phone is 603-924-3873. Subscription rates \$4.00 per year, \$7.00 two years, \$10 three years world wide. Second class postage is paid at Peterborough, New Hampshire and at additional mailing offices. Printed in Bristol, Conn., U.S.A. Entire contents copyright 1966 by 73, Inc. Postmasters, please send form 3579 to 73 Magazine, Peterborough, New Hampshire. Why not make a DX friend of yours happy with a gift subscription to 73?

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Wayne Green W2NSD/1
Publisher

Paul Franson WA1CCH
Editor

Jim Fisk WA6BSO
Technical Editor

Jack Morgan WØRA
Advertising Manager

November 1966

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Wayne Green W2NSD/1
Publisher

Paul Franson WA1CCH
Editor

Jim Fisk W1DTY
Technical Editor

Jack Morgan WØRA
Advertising Manager

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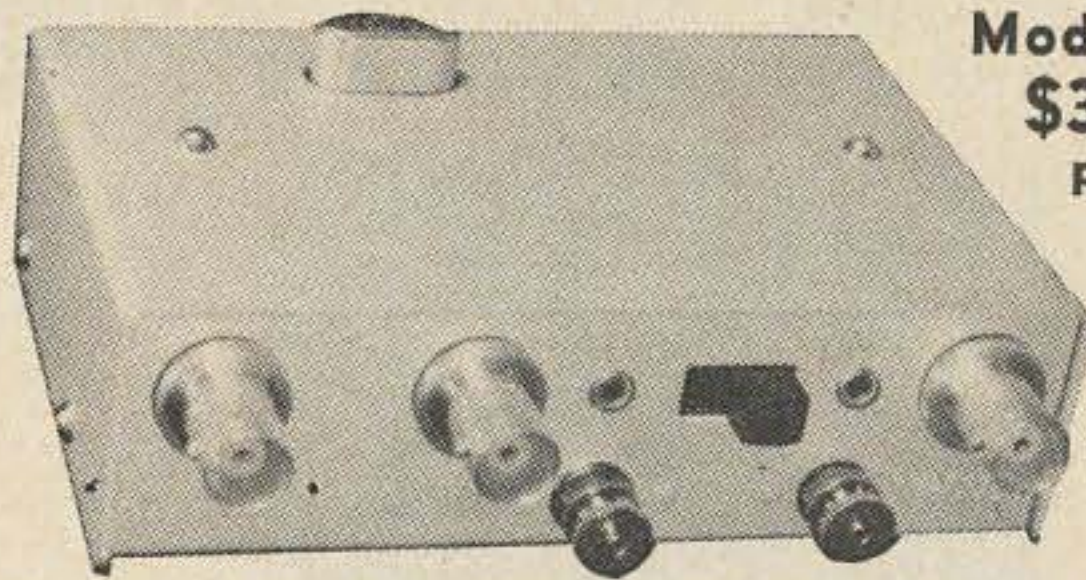
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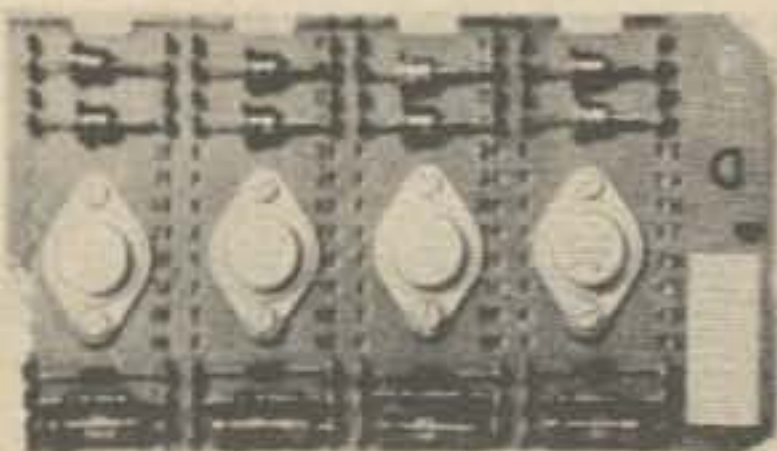
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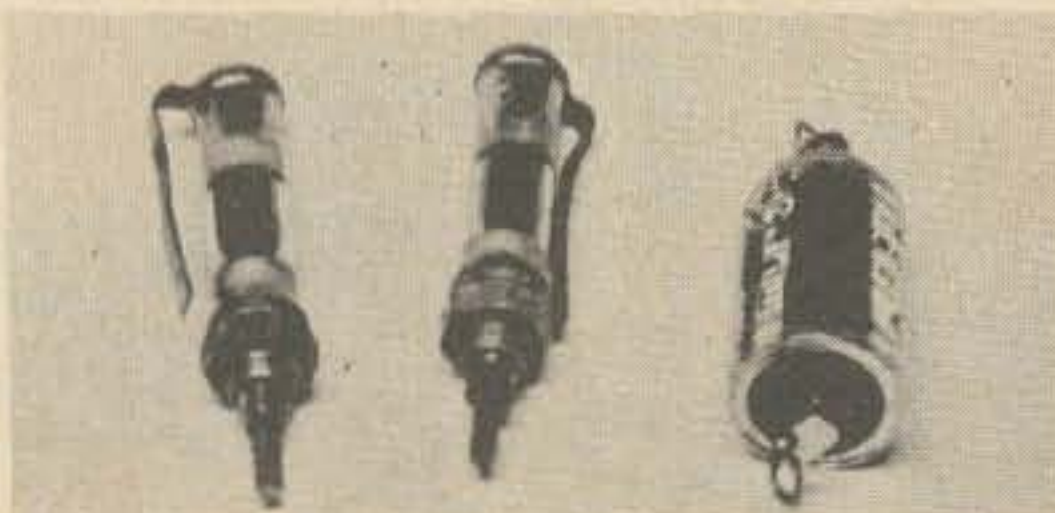
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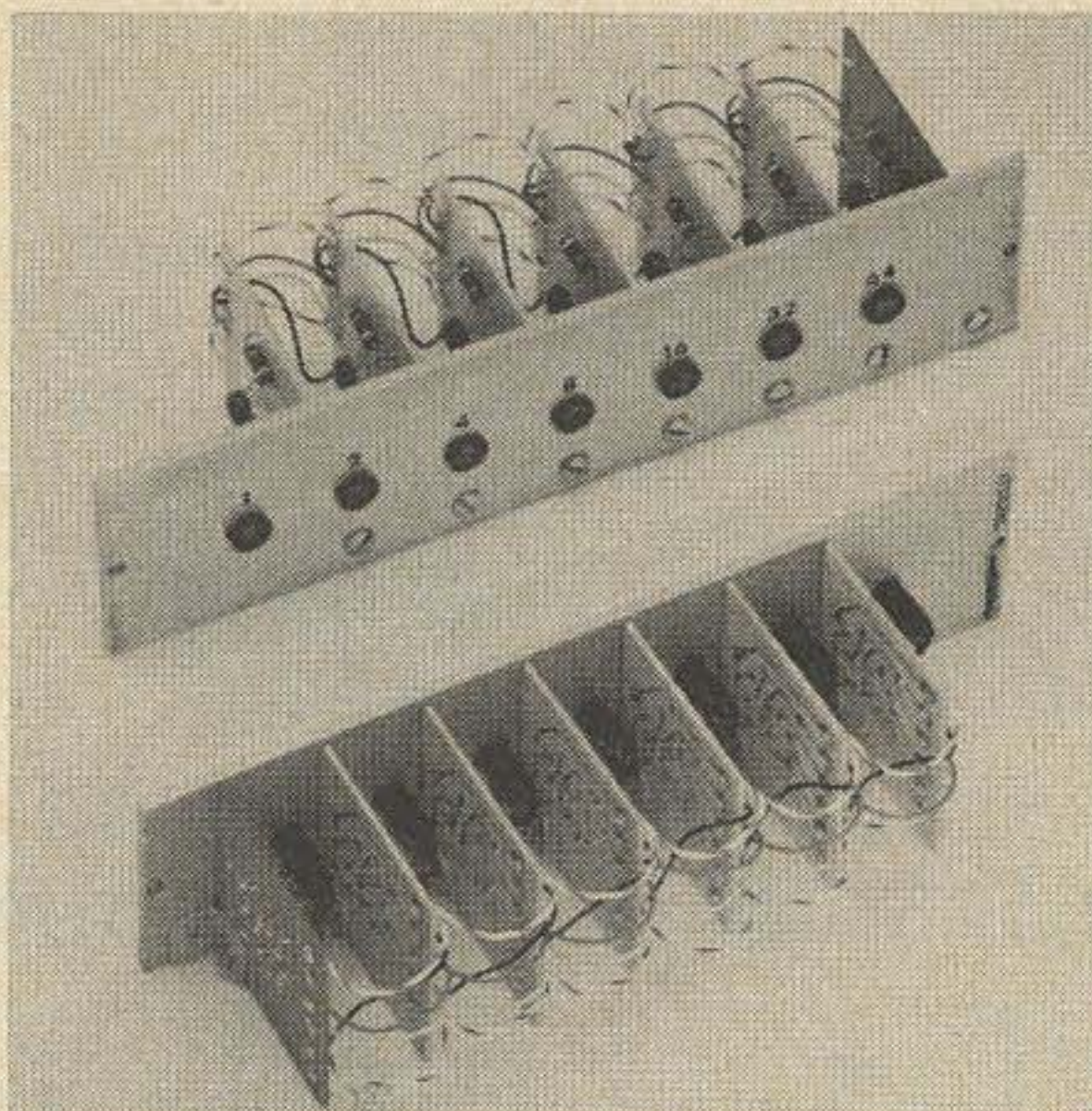
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73 ARTICLE DIRECTORY 1970

This master article directory lists, by subject, all the major articles featured in 73 Magazine during 1970. Entries are first by subject (alphabetically), then by article title (chronologically). A brief abstract of each article appears once, though the article itself might be listed under more than one category. When no abstract appears and a subject heading is shown in parentheses between the author's call and the date of publication, refer to the parenthesized subject heading to read the abstract.

Antennas

AAB-AM-FM Modulation System
W2BSP Jan
 Tongue-in-cheek technical article about a system the author actually uses. He calls it "frequency aperture" modulation. The most interesting part of the article is the author's clever adaptation of a 55 gallon drum for use as a 10 meter cavity.

Base-Tuned Center-Loaded Antenna
W2EEY Jan
 An antenna can be center-loaded without having the reactive element physically present at the center of the antenna. Transmission line transfer of the reactive element is the key.

Variable-Impedance Mobile Mount
W1EMV Feb
 A rotary switch with a few capacitors can effectively change the matching impedance of a mobile antenna.

Quick-Stop and Reverse Antenna Rotator Circuit
PY2AUC Feb
 A simple rotor modification to make the antenna stop when you want it to. Also lets you suddenly reverse the antenna's travel without fearing damage to anything too high to reach comfortably.

The Glop Will Get You if You Don't Watch Out!
W2OLU Feb
 The effects of glop (dirt and crud) on antenna connections. Contains suggestions for minimizing the likelihood of Glop build-up.

18-in. Dipole for 15 Meters
K9LGH Feb
 Supersmall antenna for cliffdwellers; incorporates two printed-circuit radiating elements.

Lossy Transmission Lines
KH6IJ Feb
 A description of the effects of an antenna transmission line's losses, and a discussion as to the insignificance of swr measurements under conditions of a lossy line.

How to Megger Your Antenna
W2EEY Apr
 A simple, proved method for periodically checking performance of a transmission line and antenna system. Can uncover faults not indicated by swr measurements.

7/8-Wave Mobile Antenna for 2 meter FM
W2EUP Apr
 An expert describes an antenna of original design, and compares it objectively with other antennas of commercial manufacture. In the Buffalo area, this 7/8-wave antenna has held the FM mobile gain record since 1967.

5/8 Wavelength Verticals
WA0NGV May
 Theory and information on 5/8-wave verticals of various descriptions. Includes radiation-angle data, construction information, and necessary equations for original design.

The Little Wonder: Mark II
W5ZBC Jun
 Another cliffdweller antenna. This one can be fashioned from an old pole lamp.

The 663 Beam
ZL2ASJ Jun
 Six elements on 10 and 15, and 3 elements on 20m. Construction plans were left out, but were printed in the Aug issue (p. 83).

Quarter-Wave Top-Loaded Mobile Antenna
W5AZE Jun
 An efficient, short quarter-wavelength dipole antenna for 20 meters.

Eleven-Element 2 meter Circular Quad
W4KAE Jun
 A new type of antenna that seems to have a lot to offer.

The Sly Beam
ZL4TAH Jun
 21 dB gain on 2 meters with a new approach to the construction of yagis.

Measuring the Difference Between Incident And Reflected Power
VE7BS Jun
 The difference is the difference. Includes circuit for measuring reflected and forward rf.

The Effects of Temperature and Frequency On Coaxial Cable Loss
W9KXJ Jun
 As transmission line temperature increases, so does loss — and vice versa. Complicating matters, the losses get worse as the operating frequency is raised. Includes charts.

Improving the Performance of Trap-Type Vertical Antennas
W2EEY Jun
 The addition of another element can considerably improve the performance of multiband verticals. The added element can be automatically bandswitched and a transmission line system used which allows simple changeover from an omnidirectional to a directive radiation pattern.

A Practical DDDR Antenna
W6WYQ Jun
 Ring-type low-profile radiator that is hard to build. Good for mobile rooftops.

Two Receivers from One Antenna
WA6UFW Jun
 An easy-to-make signal splitter that allows maximum utilization and minimum loss.

Remote SWR Indicator
W2EEY Jun
 Conventionally placed swr meters often do not indicate the true swr at the junction of the transmission line and antenna. Remote location of the reflected-power sensing portion of an swr unit is the key to true swr value indication.

The Low-Noise Antenna
WB6JNI Jun
 Blasting the theory that an antenna always works as well receiving as it does transmitting.

Measuring RF Output
WA6CPP Jun
 Using a cheapie meter to measure wattage.

Raising a Rhombic
W8DYF Aug
 All you really need is space.

Log Periodic Antenna Designs for VHF/UHF
W3DUQ Aug
 Three arrays are featured: 21–55 MHz, 50–150 MHz, and 150–450 MHz.

ATV: Getting a Better Picture
WA6BJV Aug
 Plans for a good antenna and suggestions for other station improvements.

Brew 1 on 2 — a 2 Meter Coaxial Antenna
WA0RWQ Sep
 The title is alluding to California's "Brew 102" beer. The article describes a beer-can coaxial antenna that can be fun to make if you obtain the cans as the author suggests.

Four-Wire Inverted Vee
WA6COB Oct
 Simple but effective antenna for 40 and 80 meters.

Remote Quad Tuning
W6AJZ Nov
 How to tune a quad stub from a control box situated at the operating console.

CW

The Combo
K4FQU Jan
 A CW monitor that is installed between the key and the transmitter. Contains but one transistor. Simple. Effective.

Mobile CW
K6RA Jan
 A fantastically great way to get yourself killed on a Los Angeles Freeway.

First Class Keyer Key
W6BLZ Jan
 Quickie article describes a cute modification to modernize an inexpensive but readily available "bug."

A CW Monitor
WB2GQY Mar
 How to get a 98¢ oscillator module to key on and off with rf. Uses a voltage doubler rf pickup.

Turning the AN/GRC-9 Into A Novice Rig
W6JTT Mar
 A simple conversion puts this surplus unit on 80 and 40 meters. Converted, the rig will run about 15W. Includes a detailed power supply circuit. Modulatorless, the transmitter is intended for CW operation.

What Will Become of CW?
W5TOM May
 A dissertation on the state of ham radio today, and suggestions for possible improvement. Makes a case — of sorts — for CW, and offers predictions for CW's role in amateur radio's future.

A Mobile CW Transmitter
W6BLZ May
 For those who don't know what to do with their free hands while driving.

CW Can Be Fun
Staff Jun
 An evaluation of Ord's DK-1 keyer.

QRP
WA3JBN Jun
 Two simple rigs for CW operation on 40 meters.

How to Build a Keyer and Retain Your Status as an Appliance Operator
W9KXJ Jul
 A couple of guitar picks and some relay contacts can turn out a pretty nice looking sending key.

Mobile CW Receiver
W6BLZ Jul
 For people who just can't seem to get enough code during the evening at home.

The ICmitter
Goldstein Aug
 Costs little and doesn't run much power, but it will put out a signal — AM or CW — on 40 through 160 meters.

Integrated Circuit CW ID Generator
W7PUG Sep
 A device for automatic identification — with CW — of FM repeaters. Author also offers to supply PC boards plus computer printout of any call letters, as optimized with the author's computer.

Low-Cost Automatic Keyer: A First Project
WB4MYL Nov
 Schematic, description, and circuit board layouts for an inexpensive keyer that can send from 10 wpm to over 30.

DX

How to Visit Foreign Countries
W2NSD/1 Feb
 A few salient hints for prospective travelers and sometimes DX'ers.

Ham Exchange
WA2ELA Mar
 First-hand report of a "ham exchange" whereby DX visitors stay with U.S. amateurs, then reciprocate later when the U.S. hams visit the DX country.

QSLing: Ham Radio's Own Con Game
VK4SS Jul
 One ham's negative opinion of the state of DXing today.

Latham Island DXpedition
5H3LV Jul
 Problems and successes in a recent DX trip to Zanzibar.

Worldwide ITU Prefix/Call Area List
W1SWX Jul
 Reprinted from DX'er Magazine.

YO — An Interesting DX
YO2BO Oct
 A look at Romania and a description of the hams and country.

FM

VHF-FM: A New Involvement
K6MVH Jan
 The story of FM Magazine's demise and the promise of 73 to give adequate attention to FM, an area all but neglected by ham journals in the past.

Low-Cost Electronics: Japan's FM Invasion
K6MVH Jan
 A brief overview of some of the 2m FM transceivers that are being imported for sale to the booming VHF ham market.

Setting Up the Tone-Burst System
W6TEE Feb
 The little details that are necessary in setting up a toned repeater, including a tone-burst timer for the user mobiles.

Tone Decoder for Remote Switching Applications
K6MVH Feb
 A simple and tested tone decoder that may be used for such repeater control applications as whistle-on and tone-burst access systems.

Encoders for Subaudible, Tone-Burst or Whistle-On Use
W6CZL Feb
 An extremely simple and stable transistor oscillator circuit, with adaptations for the various modes of repeater control. Includes PC board layout and construction plans.

Frequency Synthesis: The Modern Way to Control Frequency
W2EUP Feb
 A complete and comprehensive article covering theory and techniques of indirect frequency synthesis, plus schematics and a description of a practical 400-channel synthesizer used in a 2 meter FM transceiver, with only one frequency-determining crystal.

VHF-FM and You
K9STH Mar
 A "what's-it-all-about" type article covering everything that's happening in FM right now.

6-to-12-volt Filament Conversion for the 41V
W6YAN Mar
 Changing the cheaper 6V Motorola FM units to 12V types.

AC Power Supply Conversion for the Motorola 41V
K9PKQ Mar
 Schematic diagram and helpful hints for converting Motorola's trunk-mounting mobile unit to a base station.

Remote Multifrequency Oscillator for Surplus FM Units
W2ACM Mar
 Complete plans, PC layouts, and construction info for a four-frequency oscillator deck that can be used in the control head of such trunk-mounted units as GE, Motorola, Link.

Converting the Sonobuoy to a 2W FM Transmitter
W1BYX Mar
 Schematic diagram, photo, and instructions for converting the AN/SSQ-23A underwater transmitter to a 2W 2 meter FM rig. Also tells where to get such transmitters.

Kris Scanning Receiver
Staff Mar
 A close look at one of the newest entrants into the ham radio field.

A Look at Amateur FM Standards
WB6DJT Mar
 A general survey of the VHF revolution with respect to repeaters over the past few years and some suggestions for planning ahead.

A Poor Man's Frequency Meter
W6YAN Mar
 How to turn a cheap LM frequency meter into an extremely accurate piece of test equipment. You'll need the front end from a Sensicon receiver, too.

The Fine Points of FM Operation
WB2AEB Apr
 Good common sense for FM beginners. Includes good hints on setting deviation level.

Examining FM Repeater Operation
WB6DJT Apr
 A state-of-the-art article telling it like it is, with suggestions as to how it ought to be.

A Repeater Controller
WA4YND Apr
 The myriads of mechanical contrivances that repeaters inevitably wind up with can be replaced with transistor equivalents...with a resulting increase in system reliability and decreases in headaches for the repairman. Complete circuits, with timers, COR, keyer control, etc.

Understanding the Carrier-Operated Repeater
K6MVH Apr
 The complicated repeater is not really so complex after all...it's only a matter of understanding the simple operations that are taking place when somebody transmits on the input frequency.

Evaluation: Standard 2m FM Transceiver
W6QGN Apr
 A close look at the SR-C-806M transistor transceiver.

Directory of American Open Repeaters
Staff Apr
 A comprehensive listing of open repeaters in the United States and Canada. Includes editorial introduction and writeup about repeaters in general.

FM Repeaters Under Fire From FCC
Staff Apr
 The first published notice of FCC's infamous Docket 18803. Sketchy but essentially accurate.

A Word About Repeaters
WB2AEB Apr
 The trend for the future seems to be to use a compatible deviation of both narrowband and wideband rigs: this is accomplished with a peak deviation of about 8 kHz at the repeater transmitter. Other trends and characteristics also noted. Included with the repeater directory.

7/8-Wave Mobile Antenna for 2 meter FM
W2EUP Apr
 (Antennas)

FM-AM Transmitter-Receiver Aligner
W3JKL May
 A signal generator that can be used in conjunction with a transmitter to give a zero beat for frequency measurements. Also useful for aligning FM receivers.

The Intelligent Use of 2 Meters FM
K1ZJH May
 A general description of the way it's done on FM (it IS different), and a few words of wisdom to people who aren't used to working through repeaters.

A Low-Band Police Monitor
W6JTT May
 How to modify Motorola's old, no longer used 30D type receivers by building up a simple supply and diddling with the receiver oscillator.

The Wichita Autopatch
W9DKU May
 Tied in with the local repeater, this phone patch received approval from Ma Bell. Includes descriptions of the patch and tells how Ma Bell was conned into going along with the idea.

An FM Best Buy
WA7EMM May
 How to convert the world's rarest FM rig (Comco) from commercial service to the ham band.

FET Preamps for VHF FM
WA4WDK May
 Two good preamps are described — one for 6 and the other for 2 meters. Complete performance curves, construction data, schematics, etc. are given. Preamps are grounded-gate, which offers high gain, ease of tuning, and simplicity of construction.

Allied Portable FM Receiver
K9STH Jul
 An evaluation of Allied's A-2587 pocket FM receiver.

A Two-Channel Search-Lock for FM Receivers
W3DTN Jul
 Simple gadget turns a 2-channel rig into an automatic scanner type, and provides the added capability of locking onto a channel where activity is sensed.

Super Autopatch
K6MVH Jul
 Why automatic phone patches are important for public service. Includes construction data for a patch that does everything.

Repeater Audio: Time Out for Quality
K6MVH Aug
 Use of a cathode follower to pick audio directly from the repeater's discriminator can do wonders for an ailing amateur relay system.

Optimizing Antenna Separation in FM Repeaters
K6MVH Sep
 If the receiving range of your repeater can't match the output capability, the problem could be desensitization. And chances are you can solve the problem by as simple a step as moving the antennas around a little at the repeater site.

DyComm's 15W 2 Meter Mini-Amplifier
 Staff Sep
 An evaluation of a ready-made 15W class C amplifier that can be used for VHF CW or FM applications, requiring only 20 mW of drive.

Integrated Circuit CW ID Generator
W7PUG Sep
 (CW)

Low-Cost Oscillator & Infinite Attenuator for Tuning VHF Receivers
K1CLL Sep
 A signal generator with a very reliable and repeatable attenuation device for adjusting receiver front ends to maximize sensitivity.

Controlling Repeaters with Tones
K6MVH Oct
 Basic repeater control logic, and how to set up a tone control system for tone-burst or whistle-on use.

Semiautomatic FM Channel Scanning
WA0QPM Nov
 Using ordinary flasher module, this unit connects to a two-channel FM transceiver to allow monitoring of both channels by a scanning sequence. Does not lock onto a signal.

2-Meter Minitransmitter for Repeater Use
WB6BIH Dec
 A straightforward, simple transmitter with five stages using five transistors.

Regency — an FM Late-Starter
 Staff Dec
 A comprehensive comparison of the Regency 2 meter transceiver with other units currently available.

General Info
Fascinating Fundamentals: Volta and His Pile
W2FEZ Jan
 The interesting story of Volta and his experiments in galvanic research. Describes an early (and easily duplicated) battery.

Fascinating Fundamentals: The Terrible Jar at Leyden
W2FEZ Feb
 Interesting historical facts about the Leyden Jar; how to duplicate it and make your own capacitor.

How Do Ham Radio Stores Decide Trade-In Prices?
W2CEP Apr
 The owner of Stellar Industries gave this rundown on the way prices are figured in the amateur radio game. Stellar is no longer in the ham business, but the article is nonetheless applicable.

Beryllia — The Lethal Refractory
WB2PAP Apr
 Take another look at those tube boxes on your shelf; those ceramic jobs that are made with beryllia could be dynamite!!

Inexpensive New Semiconductors for the Ham
WA7KRE Apr
 Descriptions and representative circuits for a whole flock of recently introduced semiconductors from Motorola. Includes dual-gate MOS-FETs, several power amplifiers, thyristors, rectifiers, etc. Circuits included: VHF amplifier, audio amplifiers, telephone amplifier.

London's Science Museum Demonstration Station
 Ellison May
 A look inside the museum and a description of the amateur radio facilities there. Includes photos.

Plus Ten dB. . .
W2OLU May
 A quick way to relate power to decibels, and an easy method for calculating one commodity or the other when one of the commodities is known.

Selectivity Has Come a Long Way
 Swan May
 The theory of bandpass filters and a description of Swan's newest entry. Includes performance specs.

Science Fairs: Science Education?
 Mocking May
 A revealing look at the schools' approach to science education these days. Good reading for those who care.

Bigger Knobs for Better Performance
WB21CV May
 An encapsulated rundown on the findings of a high-cost program to human-engineer consoles. Modern science now says tiny knobs can cramp your style!

Epoxies for Electronics
W9KXJ May
 How to steal a trick from the professionals and use modern epoxies to perform the bonding that once had to be done with a hot soldering iron.

Comments on FCC Repeater Proposal
 Staff May
 A point-by-point reprint of the FCC's Docket 18803, along with suggested revisions to make the rules more realistic and easier to live with.

Ground Support for the Powder Puff Derby
W7ZC Jun
 The ins and outs of providing communications for the most famous air contest in the world.

The Low-Noise Antenna
WB6JNI Jun
 (Antennas)

The Effects of Temperature and Frequency on Coaxial Cable Loss
W9KXJ Jun
 (Antennas)

Government Surplus
Straight From the Horse's Mouth
WA9ANW Jun
 How to get on the Government's surplus gravy train. How to buy; how to bid.

Improving the Performance of Trap-Type Vertical Antennas
W2EEY Jun
 The addition of (Antennas) in consideration.

The Club for Blind Amateurs
 Champagne Aug
 Pictorial story of K1TPX, the Perkins Radio Club for the Blind.

Ham Radio Chess
W1EMV/0BMW W Aug
 Two schemes for annotating chess games for over-the-air play.

What Really Happened to Hamdom?
W9HBF Sep
 The author asks why we are in the state we are. He advocates QRO and a good beam as opposed to brute force power, and points to some uncomfortable comparisons between ham radio and citizens band.

YO — An Interesting DX
YO2BO Oct
 (DX)

AC Switching with Self-Powered ICs
W2FBW Nov
 A new approach to power switching of ac circuits: rfi is eliminated, power supply diodes are protected, switch contact wear is reduced, and tube heater life extended. ICs switch at the zero current point.

Pioneer Radio on the Prairie
W6CXC Nov
 Sentimental remembrances of E. E. Krebsbach and the contributions he gave to the field of amateur radio.

Helpful Hints
Proper Use of Silicon Diodes
IWA3ACL Jan
 How to use the ratings of diodes in your rectifier projects. Includes suggested applications for such diodes.

Simple Compact 6m Bandpass Filter
WA5SWD Jan
 A high-performance TVI for 6 meters that costs less than \$5 to build. The filter is to be installed in the transmitter's transmission line.

Using Diodes for Adapting AC Relays to DC
WA5SWD Jan
 Simple shorty article showing the right way to use diodes for low-voltage rectification where the object is to use dc relays with an ac supply.

The DX-35 Revisited
W2A00 Feb
 A trick or two for updating Heathkit's popular DX-35 Novice rig.

From Breadboard to Printed Circuits the Easy Way
K1A0B Feb
 A simple system for making PCs by using an Xacto knife to cur around original artwork.

Professional PC's From Roll-Your-Own Negatives
K6MVH Mar
 A means for creating high-quality printed circuits without the time-consuming and expensive dark-room processes.

Easy Diode Testing
K4JK Mar
 A clever means for nondestructively testing "bargain" diodes to learn their PIV.

Super Sizer
WA3AQS Mar
 Many little modifications that will cut the resale value of Heath's Sixer, but which will surely make the rig work better.

Renovating Surplus Meters
WA0ABI Apr
 A test or two, a dab of white paint. . . and presto!

Keep 'Em Cool in KPO Cans
G3KPO May
 Construction data for building simple heatsinks for vacuum tubes. The idea is to extend tube life and reduce heat dissipation within the tube envelope.

Epoxies for Electronics
W9KXJ May
 (General Information)

Bigger Knobs for Better Performance
WB21CV May
 (General Information)

Educated Idiot Lights
Holford May
 How to modify the car's "idiot light" warning system by adapting a buzzer to complement it.

Coax Adapter — VHF to BNC
W9MEV Jun
 A "quickie" article shows how to combine fittings to get a professional looking adapter.

Useful Cable Clamps
WA6CPP Jun
 A brisk shorty telling how to use hose clamps to hold cables.

De-RF Your VTVM
WA0FFJ Jun
 A quick and easy way to clean it up.

Two Receivers from One Antenna
WA6UFW Jun
 (Antennas)

Measuring RF Output
WA6CPP Jun
 (Antennas)

Installing the Swan 250C Noise Silencer
WA6CPP Jun
 Pictorial story tells how to do it neatly.

A Soldering Gun Tip
WB6PKA Jul
 Using silver-plated wire for soldering.

Mount That Mobile Right
K4IPV Aug
 The right kind of mobile installation will result in bigger signals, better operator safety, and more fun in hamming on the road.

ATV: Getting a Better Picture
WA6BJV Aug
 (Antennas)

Converting 24V DC Relays to 115V AC
Douglas Sep
 Three circuits and a brief article on how to accomplish this task.

Reed Relays for UHF/VHF Coaxial Switching
W7CRY Sep
 How to use reed relays in place of the expensive coax relays and get better overall performance. Includes frequency loss and isolation curves.

Neater Cabling With Nylon Cord
WA0ABI Oct
 Use of nylon and heat to make it neat.

Improving Regulation in High Voltage Supplies
K6BW Oct
 Shorting out the surge resistors with a delay circuit to improve performance of a high-voltage regulated power supply.

Calibrate that Calibrator
W2KPE Nov
 Using WWV to calibrate the receiver 100 kHz calibrator more accurately than it has ever been calibrated before.

Solid-State Delta-F Control for SSB Exciters
W4NVK Dec
 Vernier tuning eliminates dial backlash and other tuning anomalies, and gives precision variable-frequency control of operating slot.

Two-Terminal Current Limiter
Beene Dec
 Simple series circuit holds current to safe level.

Humor
The Manuscript Game
Staff Jan
 Every good article gets its due reward.

How I Read the Radio Operator's Handbook and Found Happiness . . .
Johnson Mar
 The author's story of how he mastered ham radio theory overnight.

Bob-Bob-Bobbin' Along
K1YSD Mar
 Utter chaos and hilarious confusion from the pen of 73's only insane author.

That Contest Craze
VK4SS Aug
 An old tiger bares his fangs.

Code Practice a la Baby Talk
W9OXA Sep
 Sometimes there are advantages to becoming a ham that aren't even listed in the manuals.

Camouflage
K99AZG Oct
 How to buy lots of ham gear without letting the old lady know.

Clinks in a Vacuum
Derfler Dec
 A low-pressure article for wives. (Or for husbands to show wives who don't dig radio.)

Hams are a Funny Bunch of People
K3KMO Dec
 A few of the paradoxes that make it easy for us to laugh at ourselves.

Yipes, It Talks!
W2FEZ Dec
 Fool your friends with a newspaper that talks. It's a homebrew electrostatic speaker fashioned from papers and foil.

IC Projects
Frequency Synthesis: The Modern Way to Control Frequency
W2EUP Feb
 (FM)

New Linear ICs for the Ham
WA4KRE Feb
 A down-to-earth description of Motorola's latest ICs for amateurs, along with schematics lifted from Motorola's application notes. Includes power supply and regulator circuits, amplifiers, modulators.

A Logical Approach to Surplus Buying
K5JKX Mar
 How to identify and test ICs commonly found in the surplus market. Includes an extremely literate discussion of the principles of logic.

Low Frequency I-F Modules Using ICs
K1CLL Mar/Apr
 Description of what the author feels is the ideal i-f. This text includes a very good dissertation of the ins and outs of such popular i-fs as 455 kHz.

High-Performance Power Supply Using an IC Voltage Regulator
K0ECF Jul
 0-20V at up to 500 mA in a tiny package.

An Impedance Multiplier for the VOM
K6DQB Jan
 Using an IC to do the trick.

The ICmitter
Goldstein Aug
 (CW)

Three Versatile IV Testers
WA2IKL Sep
 This article lists pin diagrams for the common ICs and describes simple testers for checking digital, linear, and counter ICs.

Understanding and Using Integrated Circuits
W6DNS Oct
 All the basics; what they are, how they're used; why they're used.

The Phase-Locked Loop Comes of Age
K5JKX Oct
 A new IC and how it can be used in some pretty sophisticated circuitry.

Low-Cost Function Generator for Experimenters
WA2IKL Oct
 Makes sine, square, and sawtooth with excellent quality.

IC Marker Generator
K4BBC Oct
 Simple IC device gives marker signal when you approach the edge of your authorized band.

Practical IC Regulator Circuits for Hams
WB2EGZ Oct
 For a 500 mA supply.

ICs for Amateur Use
K1CLL Oct
 Describes a couple of good rf amplifiers using inexpensive ICs. One for 6 meters, another for 40.

AC Switching with Self-Powered ICs
W2FBW Nov
 (Gen. Info.)

Low-Cost Automatic Keyer: A First Project
WB4MYL Nov
 (CW)

Solid-State Transceiver for 40 Meters: the SST-1
W9ZTK Nov
 A modularized QRP rig with built-in swr bridge, CW monitor. Has ICs in audio and receiver sections.

Solid-State Exciter
W6YUY Dec
 ICs and transistors makes this SSB exciter modern, inexpensive, and efficient.

(HR PROJ)
W2FEZ Dec
 Yipes, It Talks!
 (Humor)

Keyers
Transceiver Companion
W6AJZ Jan
 This is a complete control console and accessory for the transceiver that doesn't already have everything. It includes compressor, preamp, electronic keyer, phone patch, speaker, clock, and the kitchen sink all in one neat package.

CW Can Be Fun
Staff Jun
 (CW)

Low-Cost Automatic Keyer: A First Project
WB4MYL Nov
 (CW)

Mobile
Mobile CW
K6RA Jan
 (CW)

Base-Tuned Center-Loaded Antenna
W2EEY Jan
 (Antennas)

SSB-AM-FM Modulation System
W2BSP Jan
 Tongue-in-cheek technical article about a system the author actually uses. He calls it "frequency aperture" modulation. The most interesting part of the article is the author's clever adaptation of a 55 gallon drum for use as a 10 meter cavity.

The Camper — Mobile and Portable
WA9EHE Feb
 How to get the most out of a ham station when you own a camper, plenty of radios, and like to travel a lot.

Variable-Impedance Mobile Mount
W1EMV Feb
 (Antennas)

7/8-Wave Mobile Antenna for 2 meter FM
W2EUP Apr
 (Antennas)

RF Riviera Style
K9BDJ May
 The story of a Buick-owner's problems and how he traced them down in order to eliminate mobile interference.

A Mobile CW Transmitter
W6BLZ May
 (CW)

An FM "Best Buy"
WA7EMM May
 (FM)

A Ham-Style Burglar Alarm for the Car
K2JLD May
 Description of a scheme for foiling prospective rig thieves.

Educated Idiot Lights
Holford May
 (Helpful Hints)

5/8 Wavelength Verticals
EA0NGV May
 (Antennas)

The 27-Minute Mobile Limiter
W7SOH May
 How to build an effective noise limiter. As an alternative, the author shows how to modify an existing Bishop type noise limiter. The modification takes 27 minutes.

A Practical DRRR Antenna
W6WYQ Jun
 (Antennas)

Quarter-Wave Top-Loaded Mobile Antenna
W5AZE Jun
 (Antennas)

Installing the Swan 250C Noise Silencer
WA6CPP Jun
 (Helpful Hints)

Mount That Mobile Right
K4IPV Aug
 (Helpful Hints)

6V From 12 — The Easy Way
K3GSY Sep
 High current regulator that uses two transistor and a zener. Better approach than the "dropping resistor" idea.

Semiautomatic FM Channel Scanning
WA0QPM Nov
 (FM)

Noise Clippers
A Noise Blanker That Works
W8RHR Apr
 It DOES work, but the article somehow got into print without being edited, and there are some errors. Those who want to build should drop a card to editor of 73 to get straightened out on discrepancies.

The 27-minute Mobile Limiter
W7SOH May
 (Mobile)

Installing the Swan 250C Noise Silencer
WA6CPP Jun
 (Helpful Hints)

Novel Ham Radio Projects
Converting the 4CX1000 into a Lamp
K3QKO Jan
 A clever lamp for the ham's ham. Even has a switch fashioned from a coaxial connector. Better not to use a new tube for the lamp, though; it will have somewhat of an impact on the total cost of the project.

Transceiver Companion
W6AJZ Jan
 (Keyers)

The Dip Light
VE3ECU Mar
 A grid-dipper that uses lamp intensity instead of a meter.

Add Spotting to your VFO
K8BYO Mar
 Cute and simple technique that lets you hear the vfo without transmitting.

Reverse-Current Charging
K8YUC Mar
 With an almost foolishly simple technique you can successfully recharge ordinary dry cells, and make them hold the charge again and again.

Single-Sideband on the All-Wave Radio
W7CSD Apr
 A miniature tunable oscillator provides an ideal source for a beat-frequency signal, and allows you to hear code and SSB on any selective receiver without making modifications to your store-bought gear.

A Low-Band Police Monitor
W6JTT May
 (FM)

A Ham-Style Burglar Alarm for the Car K2JLD (Mobile) May	QRP WA3JBN Jun Two sample rigs for CW operation on 40 meters.	Repeaters Setting Up the Tone-Burst System W6TEE (FM) Feb
Educated Idiot Lights Holford May How (Helpful Hints)	The ICmitter Goldstein Aug (CW)	Tone Decoder for Remote Switching Applications K6MVH Feb (FM)
The Consummate Console WB2FBF Aug Increasing station efficiency and enjoyment with a broadcast-style console. Includes plans and construction data.	VHF AM Transmitter Using Low-Cost Transistors. Brubaker Aug If it'll work on AM it'll work on FM.	Encoders for Subaudible, Tone-Burst or Whistle-On Use W6ZCL Feb (FM)
IC Marker Generator K4BBC Oct (IC Projects)	ICs for Amateur Use K1CLL Oct (IC Projects)	A Look at Amateur FM Standards WB6DJT Mar (FM)
Solid-State 10-Minute Timer WB4MYL Oct Plans, layout, and PC pattern for a MOSFET timer for various station functions or repeater applications.	2W 6 Meter Transmitter Using the Heterodyne VFO K1CLL Nov Breadboard design, tuneup, and performance of an rf power stage on 6m using a \$3 transistor and a stable vfo circuit.	A Work Session on the Wichita Repeater W0DKU Apr Nobody knows any better than the repeater owner just how religiously Murphy's laws are followed by Nature . . .
Power Supplies Simple Bench Power Supply ZL2AMJ Jan Provides four output voltages, three current-overload limits. The techniques described can be applied to other power supplies.	Solid-State Transceiver for 40 Meters: the SST-1 W9ZTK Nov (IC Projects)	FM Repeaters Under Fire From FCC Staff Apr The first published notice of FCC's infamous Docket 18803. Sketchy but essentially accurate.
Proper Use of Silicon Diodes WA3ACL Jan How to use the ratings of diodes in your rectifier projects. Includes suggested applications for such diodes.	2-Meter Minitransmitter for Repeater Use WB6BIH Dec (FM)	Examining FM Repeater Operation WB6DJT Apr (FM)
A 10m/CB Preamp WA3HMW Jan Using a surplus 10m preamp with a slight amount of conversion. Details include power supply instructions.	Receivers Solid-State Double-Bandwidth Tunable I-F Converters K1CLL Jan A good tunable converter can get you any frequency or band in the VHF range you want. This article tells how, and it includes schematics, parts lists, and complete instructions.	Understanding the Carrier-Operated Repeater K6MVH Apr (FM)
Using Diodes for Adapting AC Relays to DC WA5SWD Jan Simple shorty article showing the right way to use diodes for low-voltage rectification where the object is to use dc relays with an ac supply.	A 10m/CB Preamp WA3HMW Jan Using a surplus 10m preamp with a slight amount of conversion. Details include power supply instructions.	Directory of American Open Repeaters Staff Apr (FM)
New Linear ICs for the Ham WA4KRE Feb (IC Projects)	A Simple IC Q-Multiplier W2EY Feb Using an IC opamp for a Q-multiplier. Advantages include simplicity, broad range of operation, and variable Q and peaking frequency.	A Repeater Controller WA4YND Apr (FM)
Turning the AN/GRC-9 Into a Novice Rig W6JTT Mar (CW)	High-Performance Converter for 6 WA9HES Feb Tube-type converter uses a Nuistor. This article may become valuable as the last tube converter circuit ever published.	A Word About Repeaters WB2AEB Apr (FM)
A Simple Bias Regulator for Linear Amplifiers ZL2ANG Apr Shunt regulation for bias supplies offers the advantage of low constant current drain, and it can be used with the neglected — till now — class B and AB2 linears.	Low Frequency I-F Modules Using ICs K1CLL Mar/Apr (IC Projects)	The Wichita Autopatch W0DKU May (FM)
Vacuum-Tube Load Box Ashe Apr Schematics, photos, and construction details for a power supply test set . . .	High Performance I-F Amplifier and AGC System ZL2BDB Apr For CW or SSB work, you'll find this system hard to beat with its fast-attack, slow-decay characteristics. A wide latitude of stage gain is assured with both forward-and reverse-acting age elements.	73 Comments on FCC Repeater Proposal Staff May (General Information)
Power Supplies From Surplus Components WB6BIH May Lots of theory and a few schematics for converting old surplus junk into something useful. If you're a mathematician, this is certainly your bag.	Hot Carrier Diode Mixer Converter for 2 Meters WA6NCT Apr Low noise, high gain, excellent overload resistance, and a very high degree of isolation combine to make the hot carrier diode particularly attractive for applications in receivers and converters. This article has good PC layouts, photos, schematics.	(General Information)
High-Performance Power Supply Using an IC Voltage Regulator K0ECF Jul (IC Projects) <i>Kagc.</i>	FET Preamps for VHF WA4WDK May (FM)	The Intelligent Use of 2 Meters FM K1ZJH May (FM)
More Notes on Diode Stacks W2BDG Sep A description of GE's high-power (5 kV at 300 mA) rectifier modules.	I-F Filter, Converter, AVC "Ideal" Circuits K1CLL May The second half of Hoisington's two-article series on the ideal i-f. This one includes breadboarding the complete i-f system.	A Two-Channel Search-Lock for FM Receivers W3DTN Jul (FM)
6V From 12 — The Easy Way K3GSY Sep (Mobile)	450 MHz Mighty Mite K9VXL Jul A superregenerative receiver for 432 MHz. Includes PC layout.	Super Autopatch K6MVH Jul (FM)
Simple Regulated Power Source for ICs W1RAN Oct Regulated power supply using series diodes (not zeners) to give precise values of required voltages.	Mobile CW Receiver W6BLZ Jul (CW)	Repeater Audio: Time Out for Quality K6MVH Aug (FM)
Practical IC Regulator Circuits for Hams WB2EGZ Oct (IC Projects)	Deluxe Receiver Gain Control VU2JN Sep Improving age rformance in tube-type receivers with the addition of a transistor control circuit. Includes chart showing tracking curve.	Optimizing Antenna Separation in FM Repeaters K6MVH Sep (FM)
Improving Regulation in High Voltage Supplies K6BW Oct (Helpful Hints)	A Versatile and Stable MOSFET Converter for 144 MHz WB6YVT Sep A low-noise, high performance converter with excellent gain.	Integrated Circuit CW ID Generator W7PUG Sep (CW)
Differential J-FET Preamp W4KAE Nov Design, construction data, and performance curves for a low-noise preamp using an RCA CA-3028 J-FET. Includes separate power supply circuit.	The Phase-Locked Loop Comes of Age K5JKZ Oct (IC Projects)	Controlling Repeaters with Tones K6MVH Oct (FM)
Your Second Linear W4AYI Dec High-power linear amplifier using a 3-500Z vacuum tube for the final. Includes schematic for a kilowatt power supply.	Differential J-FET Preamp W4KAE Nov (Power Supplies)	Solid-State 10-Minute Timer WB4MYL Oct (Novel HR Projects)
QRP "Quazar" QRP 40m DSB Transmitter WA5WWN Jan Good low-power rig for sideband or CW; uses 4 transistors and an audio amplifier module.	RF Applications of the Dual-Gate MOSFET Sir Nov Application suggestions from the engineering desk at Fairchild Semiconductors. Includes receiver circuits and amplifiers for VHF.	2-Meter Minitransmitter for Repeater Use WB6BIH Dec (FM)
Postage Stamp Transmitter for Six K1CLL May Complete plans — including part list, layout, schematic, and construction details for a transmitter that is an eighth of an inch thick and only 3/4 in. square. This one really works, too.		Reviews Kris Scanning Receiver Staff Mar (FM)
		Evaluation: Standard 2m FM Transceiver W6QGN Apr (FM)
		The Grundig "Satellite" Receiver Staff Jun An evaluation of a portable receive that has everything, including stable SSB.
		CW Can Be Fun Staff Jun (CW)
		Allied Portable FM Receiver K9STH Jul (FM)
		The Knight-Kit RF Generator W9KXJ Aug An evaluation of the KG-696 signal generator.
		DyComm's 15W 2 Meter Mini-Amplifier Staff Sep (CW)
		Regency — an FM Late-Starter Staff Dec (FM)

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NEVER SAY DIE

SAROC 1971

These being days of impoverishment, I had not intended to make the scene at Vegas. At the last minute Ken put on the pressure and, with the hopes of perhaps selling a page or two of ads to help balance the books, I hopped on down there.

Just after taking off from Boston I had a short contact with WITNO through the W1ALE repeater in Concord, N.H. No answers at Schenectady... some short contacts in western New York... Cleveland was kept busy with long-winded nonlistening talkers... ditto Detroit... contacts in Chicago... no one around in Urbana... and so it went. Omaha was not open to breakers. About ten minutes out of Vegas I picked up their repeater and talked with the gang the rest of the way in, while waiting for baggage, and during the limousine ride to the hotel. One mobile pulled up alongside, waved, and then broke in to say hello.

It was colder in Vegas (15°) than in New Hampshire so I grabbed my camera and went across the street (watching out for any possible ARRL-driven cars) and took pictures of the ice-encrusted fountains at Caesar's Palace. Art Housholder W9TRG, arriving on a Frontier Airlines plane, came through the repeater at this time and I talked with him as he flew over Lake Mead and later while he was waiting for his baggage at

and every mobile within 100 miles of town. My last contact was from the airport as I went to get on the plane and I said goodbye to Ken, who was just that minute getting out of bed back at the hotel. TWA shut me up from there until I landed in Boston. I have this black curse to put on TWA: May the board of directors eat one meal a week in the tourist section of their planes. That'll hold 'em.

FM/Airborne

Yes, I use my little two meter FM hand transceiver while I'm a passenger on the airlines! It works out beautifully, too. About the only serious problem I have with it is trying to get a word in edgewise on the repeaters I fly over. All too few of the fellows talking over repeaters ever give even one second for a passing-through breaker.

On the way to Saroc I tried to get through a number of repeaters, but just couldn't break the big signals with my hand transceiver. Oh, there were several that I did get into and it was fun to talk for the few minutes I was within range.

How about the plane, you ask? Many of the FM'ers who have hand units have tested them to make sure that no interference is caused to the plane radio or instruments and none has occurred. Considering the use of FM, the frequency and the low power involved, I would not expect to find any interference. Most of the FM'ers

THE WORLD OF FM

Editorial by Ken Sessions K6MVH

THE FM SCENE

SAROC was great fun this year. The Flamingo Hotel provided excellent accommodations and Las Vegas provided the atmosphere. I didn't hear a single complaint from so much as even one ham this time.

Times are a'changin', too. A few years ago, gamblers and hotel officials got uptight at the sight of individuals carrying hand-held transceivers through the casinos. But with literally hundreds of 2m FM units protruding from the pockets of so many hams this year, the hotel people apparently grew accustomed to it. No one reported any problems at all - except for the fact that the hotel security people reportedly complained that the hams had newer and better equipment



Dr. Phil Dater, representing the New Mexico repeater chain, gave a slide presentation showing repeater progress in the midwest.



Pretty Linda Mueller, wife of WB6IGZ, tended bar in Room 1031A, a spur-of-the-moment hospitality suite.



The lovely Sharon La Traille, of Varitronics, Incorporated, demonstrated 2m transceivers, amplifiers, and antennas.

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On The Cover:

Lin Green talks home via two meters while skiing on Mt. Snow in Vermont, checking on daughter Sage, being minded by Ken. The 110-mile path is via K1ZJH repeater about 60 miles away. (Where's Wayne, you say? Who do you think took the picture?)

73 Magazine is published monthly by 73 Inc., Peterborough, New Hampshire 03458. Subscription rates are \$6 for one year in North America and U.S. Zip Code areas overseas, \$7 per year elsewhere. Two years \$10 in U.S. and \$12 overseas. Three years \$14, and \$16 overseas. Second class postage paid at Peterborough, N.H. and at additional mailing offices. Printed at Menasha, Wisconsin 54952 U.S.A. Entire contents copyright 1971 by 73 Inc., Peterborough NH 03458. Phone: 603-924-3873. Usually reliable sources inform us that continued reading of one of our competitor magazines is a positive mental health hazard. We are not at liberty to divulge the name of the alleged magazine, however we will give you one guess. Be on the safe side and read only 73.

the airport... I was just walking around taking pictures all the while.

SAROC was an FM convention this year. The ARRL Forum pulled about a dozen while the FM Forum next door was jammed with hundreds. Ken Sessions organized the FM program and it certainly was the hit of the convention. Most of the exhibitors were FM oriented... Regency was there en masse... Varitronics displayed their mobile IC2F, their hand unit, and lovely Sharon LaTraille (you saw her in the "Ham's Wide World")... Drake had their sideband gear there, but the attention was on their Marker Luxury FM rig and the brand new TR-22 walkie-talkie unit... Walt Henry proudly displayed his Tempo FM rig... Galaxy was there with their FM-210... Standard displayed a new transceiver and a mini-repeater. Lou Tristano had a tower that he feels FM'ers will like... Swan was showing their new FM rig from Japan... Ross & White showed their line of tone encoders and decoders... Sentry took orders for a lot of crystals from their interesting booth... and so it went.

A few non-FM manufacturers were present too... Dick Ehrhorn was showing his new all-band linear amplifier... Collins was there, but with nothing new for the amateurs and no FM plans whatever in the foreseeable future... Carl Mosley was there... Robot had a nice demonstration of slow-scan television. Spectronics brought a bunch of FM Motorola hand transceiver modules and the building crowd cleaned him out... ComSpec had its new gain vertical 2m antenna on display as well as their new 2 meter 50W amplifier... the Pierce-Simpson FM unit made its first appearance at SAROC.

My HT-220 hand unit was with me day and night and I have to admit to having a lot of fun. I kept in constant communication with Ken, the FM hospitality suite, dozens of friends, in the convention, the exhibits, the talks,

ask the plane captain for permission to use their rig while flying and, though permission can be refused on the basis of a regulation against using receivers in a plane, usually there is no hitch.

Sad to say, TWA has been one of the least cooperative with amateurs. Alas, I've been riding with TWA since they were Transcontinental Western Airlines, over 40 years ago, but I will choose alternative travel in the future where possible since I do enjoy operating while traveling. It wouldn't hurt them any to be nice... there is a lot of competition... and a growing number of amateurs with hand transceivers. The new little Drake unit (1½ watts) would be ideal for this!

Perhaps I should be in more awe of the complicated electronics in these planes, but my experience as a pilot, my tenure with Airborne Instruments Laboratories, and other background has lessened the mystery. Add to that several trips with no interference reported, even with a 5W unit, and similar reports from a dozen or other amateurs.

So look fellows, when you are talking through a repeater about something of earth-shaking importance, like how many 6SN7s you have left from the old days, won't you be nice enough to at least take one breath between transmissions so I can break in for a minute or so and say hello as I pass over on some other airline than TWA? You can't imagine how frustrating it is to hear you down there talking without being able to ever break you!

New Repeater Bulletin

Mike WA8UGT has announced that he is planning on starting a repeater bulletin later this year. I am sure that all of us who remember the fine FM Journal that Mike and Ken Sessions published will be pulling for him to make it this time. With all but one amateur magazine reported to be in the red this is a particularly difficult

than they themselves had been issued. *C'est la vie!*

Some nice surprises were in store for convention-goers. Mr. Everett Henry, FCC officer in charge of amateur and CB policy-making, showed up and agreed to answer questions from FM'ers. He drew a bigger crowd

Mr. Henry's evasiveness was understandable, in view of the fact that the FCC does not plan to get deeply involved with repeater legislation until after the "phone band expansion" issue is settled. The notorious docket (18803) as well as my own petition (RM-1725) are both stacked neatly on



The whole staff of Regency Electronics showed up. They were kept busy demonstrating the company's growing line of equip.

in the FM room than any other speaker on any other subject in any other quarter. He was peppered with questions about repeater rulemaking, unofficial sanctions, and such matters, and managed to sidestep all major issues with the adeptness of a politician.



Walt Henry, of Henry Radio, showed his company's new high-performance, low-cost Tempo FM transceiver, which was itself a smash success at the convention.

the desk of FCC's Bill Grenfell, who will get going on them some time before midyear.

SAROC's display area looked pretty much "FM," too, with manufacturers proudly showing their latest FM transceivers, rf amplifiers, and other related hardware. Art Housholder showed slides of Spectronics to a packed house. The fact that he did it in the "hospitality suite" contributed to its popularity; the room was stocked with free beverages.

For me, SAROC was a stepping stone to a tropical vacation. When the convention was over, I flew to Los Angeles for a week in the sun and smog. Thanks to the hospitality of my California friends, the week was not as expensive as it could have been.

But I'm glad the week ended when it did. My California friends all know that I flip over Mexican food, and that Mexican food is just not available in New England. So each of my contacts in California went overboard to serve

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73 Magazine is published monthly by 73 Inc., Peterborough, New Hampshire 03458. Subscription rates are \$6 for one year in North America and U.S. Zip Code areas overseas, \$7 per year elsewhere. Two years \$10 in U.S. and \$12 overseas. Three years \$14, and \$16 overseas. Second class postage paid at Peterborough N.H. and at additional mailing offices. Printed at Menasha, Wisconsin 54952 U.S.A. Entire contents copyright 1971 by 73 Inc., Peterborough NH 03458. Phone: 603-924-3873. What staffers of what ham magazine have mysteriously emerged with conditional licenses? Do they even know the code? or a dB from a farad?

The Cover

Does FM run in the Sessions blood? Here is Murry Sessions, daughter of K6MVH/1 and WA6SPT/1, really enjoying the new Drake TR-22 2m FM transceiver, a six-channel portable unit which can operate from 115V ac, 12V dc or built-in batteries.

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73 Magazine is published monthly by 73 Inc., Peterborough, New Hampshire 03458. Subscription rates are \$6 for one year in North America and U.S. Zip Code areas overseas, \$7 per year elsewhere. Two years \$11 in U.S. and \$12 overseas. Three years \$15, and \$16 overseas. Second class postage paid at Peterborough, N.H. and at additional mailing offices. Printed at Menasha, Wisconsin 54952 U.S.A. Entire contents copyright 1971 by 73 Inc., Peterborough NH 03458. Phone: 603-924-3873. We don't wish to cause any alarm, but reports of great disasters have been coming in from 73 readers who have permitted their subscriptions to lapse. Why take chances?

On the Cover:

DLØSTA, Germany's first 2m FM repeater atop Stuttgart's famous Fernsehturm.

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Cover: W2NSD/1 antenna. Three elements on 20 meters.

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Cover: From the dusty reaches of the W2NSD/1 garage comes this collection of ham license plates. We invite all 73 readers to send us their old call plates so we can replace all the shingles on the 73 barn with call plates.

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Cover: The 73 DXpedition to the Caribbean gets under weigh. Tex will stop and operate from every rock that sticks out of the water at high tide if you ask him to. See the poll on page 55 and put your oar in the water. For that matter, Tex will be delighted to have you visit with him anywhere and take a turn or three at the rig.

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Cover: Posterized print of the VHF Contest effort by the Waltham Amateur Radio Club on Pack Monadnock in Peterborough, N.H. this last June. Credit Roger Block with the effect if you like it.

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Cover: Posterization of the Regency HR-2A FM transceiver as cooked up by Roger Block.

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Cover: "Chuck" Webb K0BWR gets the credit for this month's cover shot of Debby Hebert.

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COVER: A fairly merry Christmas from the dedicated little group that brings you 73 each month. Reading down, left to right, we have controversial Wayne Green, editor, resident gourmet cook and bon vivant. Phil Price is next, our architect of the newspages, solver of circulation miseries and about 50 other jobs. Eric Falkof K1NUN, the new assistant editor, will be the scapegoat for all of Wayne's blunders. Aline Coutu, one of the reasons 73 is doing so well with advertising, is a church organist as well as advertising manager at 73. Roger Block, art director, designs covers like this one, draws hilarious cartoons, and smokes a stink-pot pipe. Nancy Estle, our artist, puts together most of the pages of 73 as well as a lot of the ads. Isn't she a doll? Ruthmary Davis fights the vagaries of the IBM composer to set the type for 73 and our growing line of books. Dotty Gibson handles the subscriptions and tries her best to deal with the seemingly insane computer which tries to screw up our mailing list every month. Biff Mahoney tends the cantankerous presses in the 73 printing department. He has developed an impressive vocabulary of blue words which seem to help keep things running. Barbara Block keeps your information requests flowing smoothly (please send in one to her today with a little note of thanks and let her know that she is not forgotten), a chore which helps Aline keep the advertisers happy and, in turn, 73 in business. Taylor Sage does almost everything else . . . like keeping everything running despite the best efforts of our machines to self-destruct, getting the mail, putting on a new roof, binding books and magazines, and etc. Gigi Sage, Taylor's wife, bookkeeps, making herself known primarily to delinquent advertisers. Taylor and Gigi live in a nice little place they call Motley Gardens out in the woods at the end of a long driveway. If you find yourself in New Hampshire please stop in and say hello to all of us!

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65 May	1w 2m FM xmtr—WB6BIH
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93 May	QRP on 180 kHz?—W5SOT
23 Jun	220 signal generator—K1CCL
55 Jun	Hybrid 40m xmtr—WB6BIH
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71 Aug	450 MHz exciter—K1CCL
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35 Mar	6&2 surplus power—K4EPI
27 Apr	Taming FETs on 2m—K1CCL
31 Apr	1 and 6w 2m amplifiers—WB4DBB
83 May	6m 5w amplifier—K1CCL
23 Jun	220 signal generator—K1CCL
31 Aug	VHF pwr amp design—K6RAD
65 Sep	2m converter—WB6BIH
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Station Identifier

\$75



The CWID-50 provides automatic ID for repeater stations in perfect Morse code. Has factory-programmed IC memory. Brochure describes CWID-50 and CWID rack models.

control signal co 5964 W. COLUMBIA PLACE DENVER, COLORADO 80227

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New breed on 2 m	25 Apr	Making it small	98 Sept	Money = future for HR	42 Oct			
Funny article, sorta	51 Apr	Select-o-ject	114 Sept	Hold that rig	85 Oct			
Operating from a sauna	63 Apr	2m synthesizer	31 Oct	Learn a foreign language	109 Oct			
Amateur glossery for CB'ers	74 Apr	Selective calling	51 Oct	Extension cord ratings	117 Oct			
Finding room for the rig	27 May	Moskey, pt II	89 Oct	Emergency ferrite beads	42 Nov			
Catching the 2 m streaker	67 May	Sync gen for CCTV	113 Oct	187,000 phone patches	124 Nov			
Poor man's quad	17 June	Pulse gen	141 Oct	Parts for nothing	36 Dec			
Mono reproducer	57 Sept	K2OAW counter update	26 Nov	Wind indicator	41 Dec			
FCC as seen by	20 Oct	Synthesizer, pt II	44 Nov	Bargaining at hamfests	96 Dec			
Don't overlook XYL	50 Oct	SWR computer, pt I	80 Nov	Don's magic carpet	115 Dec			
Bench job	104 Oct	Moskey, pt III	97 Nov	MOBILE				
My ham's old shack	123 Oct	Aug scan conv update	105 Nov	How to go mobile	101 Jan			
Murphy's law	136 Oct	Beep, beep you're high	108 Nov	CD ignition system	17 May			
Roger's cartoon	55 Nov	Logic circuit keyer	53 Dec	Finding room for the rig	27 May			
Experiment in terror	66 Nov	SWR computer pt II	86 Dec	Boat interference suppression	31 May			
IDENTIFIERS		IRS EDITORIALS			Mobile alarm	39 May		
ID circuits	29 Jan	3 Jan	2 Apr	2 June	Reducing mobile noise	41 May		
INTEGRATED CIRCUIT CONSTRUCTION PROJECTS		3 Feb	2 May	2 July	Burglar alarm	45 May		
Audio osc	25 Jan	102 Mar	KEYERS			Mobile security	59 May	
ID circuit	29 Jan	Whistle up a QSO			55 Jan	Removable ants	55 Oct	
Fax converter	63 Jan	Transister keying circuit			90 Feb	2m antenna	77 Oct	
CPO	93 Jan	Tape recorder keyer			34 Apr	Headlight reminder	141 Oct	
Timer	124 Jan	Moskey, pt I			19 Sept	MODULATORS		
Counter input circuit	125 Jan	Moskey, pt II			89 Oct	25 W	90 Mar	
Scanner	126 Jan	Moskey, pt III			97 Nov	Diode ring mod	34 Apr	
Freq divider	126 Jan	Logic circuit keyer			53 Dec	MORSE CODE		
Conductivity checker	128 Jan	KITS						
SSTV monitor	20 Feb	Speedup kits			54 Mar	Code tapes offered	3 Jan	
Audio amp	25 Feb	LOGIC CIRCUITS						
IC SWL receiver	71 Feb	Decimal counter			47 Jan	Pop 73 code course	19 Jan	
Transistor keying circuit	90 Feb	Digital design			83 Jan	Code generator	77 Mar	
Seven segment readout	95 Feb	Seven segment readout			95 Feb	NEW PRODUCTS		
Constant current sources	29 Mar	Logic probe			31 Apr	Hal morse keyboard	16 Feb	
Mike amp/tone gen	45 Mar	Basics			85 Aug	Spectrum Int filter	17 Feb	
Macro ICology	67 Mar	Fail safe switching			97 Aug	Motorola rectifier book	17 Feb	
Code generator	77 Mar	Dual edge detector			99 Aug	DX QSL guide	17 Feb	
FM autostart	21 Apr	Resynchronizer			99 Aug	K Ent prescaler	17 Feb	
Fax converter	29 Apr	RC clock gen			99 Aug	Rectifier comp MPR	17 Feb	
Scanning xcvr	67 Apr	Edge detector			101 Aug	Alpha tone encoder	17 Feb	
Tone gen	79 Apr	Logic probe			6 Dec	Heath kit digital clock	50 Feb	
Dual tone decoder	33 May	Keyer			53 Dec	Ten-Tec modules	60 Mar	
TT decoder	34 May	Logic probe			76 Dec	Cepco II decoder	12 Mar	
Phase shifter	33 May	MATH						
Load switcher	33 May	RC calculations			31 Mar	Ramko distrib amp	12 Mar	
Tone decoder	35 May	Slide rule rules			72 Aug	Motorola 1024-bit RAM	13 Mar	
Pulse gen	35 May	MISC						
Osc doubler	35 May	RF toroids			58 Mar	Panasonic clamp meter	13 Mar	
2 m rf stages	47 May	Insulator rf properties			62 Apr	Bird digital rf wattmeter	13 Mar	
RF preamplifier	79 June	Switching osc			78 June	Motorola IC data book	13 Mar	
Freq gen	33 July	Diagrams			73 July	Motorola IC xtal osc	13 Mar	
AFSK gen	37 July	Carrier current rig			85 July	73 cassette theory course	7 Apr	
Ten minute timer	47 July							
					Courier mobile mike			7 Apr
					TRW 1 GHz xsistor			7 Apr
					Turner noise canc mike			8 Apr
					Control sig keyer module			8 Apr
					Antenna spec coax			8 Apr
					Kirlian photo kit			8 Apr
					Electronic dev rect			8 Apr
					Pacificom 2 m HT			8 Apr

Signetics timer IC	8 Apr
McGraw Hill memory book	8 Apr
Heath weather station	8 May
Heath thermometer	8 May
Heath ultrasonic cleaner	8 May
Heath AA-2005 amp	8 May
TRW Schottky sheet	8 May
Alpha two tone decoder	8 May
Yaesu FR-101S rx	8 May
Amperex tuning diodes	8 May
Continental spec breadboards	8 May
Sencore FET multi-meter	9 May
Tucker catalog	9 May
Motorola power Xsistors	9 May
RK scanner module	9 May
Motorola dual gate mosfets	9 May
Alden recorder	9 May
Heath HW-202	37 May
Newtronics CGT-1214	43 May
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Icom IC-230	14 June
TRW amplifier	14 June
Radio shack time kube	15 June
Motorola McMos data book	15 June
GE sensor	15 June
Motorola high power plastic	15 June
Wahl soldering iron	16 June
Motorola RAM	16 June
Millen power supplies	16 June
Dycomm super D	9 July
CDR ham II	9 July
Keeps-it kit	9 July
Wilson 2 m HT	90 July
Midland 13-500 2 m	61 Aug
JM communication 6100	112 Aug
Valor probe	112 Aug
VHF engineering repeater	112 Aug
Leasametric catalog	112 Aug
Motorola rectifiers	112 Aug
Partridge xtal set	112 Aug
Palomar R-X noise bridge	113 Aug
RGS tone gen	113 Aug
Turner catalog	113 Aug
TRW UHF xstr	113 Aug
GE optical sensor	113 Aug
TRW 7.5 v module	113 Aug
Greene's tools	113 Aug
Telonix BC xmtr	113 Aug
Amperex c/mos logic ic's	114 Aug
R-Ohm function gens	114 Aug
Stahler drills	114 Aug
Genave GTX-600	10 Sept
Hallicrafters FPM-300	10 Sept
Palomar R-X noise bridge	11 Sept
Cushcraft ringo ranger	136 Sept
Cubex quad	136 Sept
Emergency beacon 144 jr	16 Oct
RGS tone gen	17 Oct
Heath HWA-202-1 ps	41 Oct
VHF engineering HT-144B	126 Oct
Tucker corvus clock	133 Oct
Welt/safe lock light pod	134 Oct
Heath 1975 catalog	135 Oct
Fairchild CCD-201	5 Nov
Regency HRT-2	116 Nov
Heathkit GR-78	109 Dec

NOVICE

German novice training	117 Jan
Teaching novices	75 Nov
Perils of novicehood	58 Dec

OCEANUS

Calls	106 Apr
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OSCILLATORS

CPO	93 Jan
2 freq osc	124 Jan
VFO for TR-22	125 Jan
Xtal osc	127 Jan
2m xmitter	102 Feb
Mike amp/tone gen	45 Mar
FET pierce osc	89 Mar
Diode osc limiter	89 Mar
Two injection freq osc	90 Mar

PHOTOGRAPHY

Conductivity checker	128 Jan
Flash tubes	109 Sept

POWER SUPPLIES

Variable PS	87 Jan
Constant current sources	29 Mar
CRT PS	53 Mar
Free xformers	53 Mar
Line VM	54 Mar
Capacitor Covers	56 Mar
Screen reg for ART-13	79 Mar
Power xfrmr ratings	80 Mar
Protection circuit	90 Mar
Free TT batteries	27 July
3000 V DC	69 July
Correction	134 Oct
230 V ac supply	64 Aug
Universal PS	65 Aug
120 V variac on 220 V	78 Sept
5 V PS	43 Oct
5 V counter supply	36 Nov
Emergency xfrmr	94 Nov
Nicad care	24 Dec

PRINTED CIRCUITS

Better circuit board	52 Feb
The agitable	41 Sept

QRP

Ten-Tec modules	60 Feb
10m xmitter	63 July
6m am xmtr	59 Sept

RECEIVERS

Pot repair	56 Mar
Early communications rx	69 Mar
BFO	90 Mar
IC swl receiver	71 Feb
Noise limiter	100 Feb
2 m receiver	100 Feb
DC isolation	55 July
IF stage	82 July
AGC circuit	82 July
AM or FM clipper	84 July
R-390 A	39 Aug
R-392	47 Aug
Bishop noise limiter	71 Sept
Tuned diode VHF rx	81 Dec

REPEATER CIRCUITS

ID circuit	29 Jan
Timer	124 Jan
Cavities	17 Mar
Delayed VOX	17 Apr
FM autostart	21 Apr
Dual tone decoder	33 May
TT decoder	34 May
Tone decoder	35 May
ID timer	95 Aug
Selective calling	51 Oct
AM vs FM inputs	67 Oct
Beep, beep you're high	108 Nov

RTTY

RTTY commercial stations	105 Mar
Mark/space demod	77 June
Mark/space correction	142 Nov
AFSK gen	37 July

SATELLITES

Copying WX pix	11 Mar
Oscar converter	53 May
WX satellite on SSTV	79 Sept
Oscar 7 with one rx	98 Oct
Modify WB8DQT circuit	48 Dec

SCANNERS

Scanner	126 Jan
Control panel for scanner	67 Apr

SCHEMATIC OF THE MONTH

Regency HR-6	74 June
Wilson 2 m HT	90 July
Midland 13-500	104 Aug
Regency HRT-2	116 Nov

S-METERS

S-meter	127 Jan
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SSTV

SSTV monitor	20 Feb
Coax hybrid ring	11 Mar
Independent Sideband	11 Mar
Program contest winner	12 Mar
Slow to fast conv	4 Apr
Slow scan gen	4 Apr
Instant SSTV programs	106 Apr
SSTV glossary	4 Apr
Scan converter	73 Aug
WX satellite on SSTV	79 Sept
Vertical trigger	124 Oct
Fairchild CCD-201	5 Nov
Visual coupler	4 Nov
Aug scan conv update	105 Nov
SSTV tape secrets	73 Dec

SURPLUS

Screen reg for ART-13	79 Mar
AM-1187/TRC on 450 MHz	91 Mar
Motorola FM	85 Mar
GE xcvs	95 Mar
RCA FM tuning hint	77 Apr

Saving xistors	31 July
R-390 A	39 Aug
R-392	47 Aug
Motorola metering	65 Oct
Motorola model nos	74 Oct

SYNTHESIZERS

For HT-220, pt I	31 Oct
Murphy's law	136 Oct
For HT-220, pt II	44 Nov

TAPES

Code tapes offered	3 Jan
Pop 73 code courses	19 Jan
Auto TT dialer	111 Jan
Viva cassettes	3 Sept
SSTV tape secrets	73 Dec

TAPE RECORDING

Whistle up a QSO	55 Jan
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TECHNICAL AID GROUP

9 Jan

TELEPHONE

Telephone control	41 Feb
Telephone ring relay	31 Apr

TEST EQUIPMENT

Audio osc	25 Jan
Line monitor	39 Jan
Leading zero sup	107 Jan
Cap measuring	110 Jan
Phase splitter	124 Jan
Audio preamplifier	125 Jan
Audio signal gen	125 Jan
Diode checker	126 Jan
Freq divider	126 Jan
Conductivity checker	128 Jan
FS meter	128 Jan
CW monitor	177 Jan
Injection osc	177 Jan
Voltage tester	177 Jan
Sweep gen	32 Feb
Blown fuse indicator	57 Feb
Testing the 432'er	77 Feb
2 m receiver	100 Feb
Capacitance meter	101 Feb
2m xmitter r	102 Feb
Signal injector/tracer	102 Feb
RF detector probe	102 Feb
X-Band	33 Mar
More on K20AW	49 Mar
Line VM	54 Mar
Xtal checker	59 Mar
Increase GD range	59 Mar
Diode checker	89 Mar
High imp probe	89 Mar
Sawtooth gen	90 Mar
2 m sig gen	93 Mar
Logic probe	31 Apr
Phase shifter	33 May
2m attenuator	50 May
SWR bridge	55 June
Freq gen	33 July
Low range Ohmmeter	80 July
Pulse gen	80 July
Capacitance decade	81 July

Continuity checker	84 July
Signal injector	84 July
SWR meter	17 Aug
Directional Wattmeter	17 Aug
Accessory for GDO	35 Aug
Audible Voltmeter	55 Aug
Heath 10-103 improvement	55 Sept
IC tester	95 Sept
Infinite RF atten	107 Sept
WWV on ac-dc sets	116 Oct
RF sniffer	64 Nov
SWR computer, pt I	80 Nov
Basic bridge	95 Nov
Line hot side finder	142 Nov
Logic probe	6 Dec
Meters/meter faces	70 Dec
Logic probe	76 Dec
SWR computer, pt II	86 Dec

TIMERS

Timer	124 Jan
Long duration timer	101 Feb
Delayed light turn off	31 Apr
10 minute timer	47 July
ID timer	95 Aug

TOUCHTONE

Touchtone pad	73 Jan
Auto TT dialer	111 Jan
Free TT batteries	27 July
Trimline	37 Aug
Selective calling	51 Oct
Tone - how to touch	71 Nov
TT freaks	144 Nov
TT pad enclosures	114 Dec

TOUCHTONE FOLLIES

15 Jan	14 Mar
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TOWERS

EZ way tower	103 Sept
Aid for pulling sections	142 Nov
Finding height	84 Dec
Power pole, El cheapo tower	89 Dec

TRAVEL

Norwegian licenses	110 Mar
Carnets	106 Apr

TV

Video tape recorders	43 Jan
SSTV monitor	20 Feb

TVI

TVI fixit	128 Oct
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UHF

432 and 1296 MHz osc	35 Jan
Testing the 432'er	77 Feb
Noise limiter	100 Feb
X-band	33 Mar
AM-1187/TRC on 450 MHz	91 Mar

VFO's

VFO for TR-22	125 Jan
VXO	128 Jan

VIDEO TAPE RECORDERS

Video tape recorders	43 Jan
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VISITING MANUFACTURERS

Visiting Regency	91 Jan
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WIRING

Wiring harnesses	97 Jan
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1296 MHz

432 and 1296 MHz osc	35 Jan
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432 MHz

432 and 1296 MHz osc	35 Jan
Testing the 432'er	77 Feb
AM-1187/TRC	91 Mar
432'er - DC isolation	55 July
FET's on 450	27 Aug
432er - 1.65 MHz i-f	79 Oct

2M

TR-22 antennas	105 Jan
VFO for TR-22	125 Jan
Scanner	126 Jan
S-meter	127 Jan
VXO	128 Jan
2 m receiver	100 Feb
2m xmitter	102 Feb
Cavities	17 Mar
Drake R4B as sig gen	93 Mar
SSB converter	55 Apr
Scanning scvr	67 Apr
Tone gen	79 Apr
Heath HW-202	35 May
IC rf stages	47 May
Impr gladding 25	61 May
Catching the streaker	67 May
Trim line	37 Aug
Midland 13-500	61 Aug
2m waterpipe ants	69 Oct
Mobile antenna	77 Oct
Synthesizer, pt I	31 Oct
Synthesizer, pt II	44 Nov

6M

6m xcvr	61 Mar
6m DXing	49 Sept
AM xmitter	59 Sept
Xtal osc	24 Oct
Preamp	111 Oct
Hot front end	88 Nov

10M

10m tuner	57 Jan
QRP xmitter	63 July

15 M

15 and 20m vertical	37 Feb
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20M

20 m loop	89 Jan
15 and 20m vertical	37 Feb
Ten-Tac modules	60 Feb

40 M

Ten-Tec modules	60 Feb
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80 M

My favorite band	69 Sept
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9 Looking West
10 Traveling Ham
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COVER: Gene Kundert W8YEK (page 120).

amateur radio

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WB2NQT	47	Twinlead Phased Array <i>Two elements on 40m - or any other band.</i>
WØKGI	49	The Incredible Capacitive Antenna <i>Now: an 18" allband antenna.</i>
W2OZH	52	An 80m Phased Array <i>Switchable directivity.</i>
W5GDQ	58	A Coax Amplifier for 450 MHz <i>6 dB stacked collinear.</i>
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ANDERTON	143	Yet Another Etching Technique <i>Something fishy here.</i>



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COVER: Drawing
by Bill Morello.
Article, page 97.

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W6JTT	142	Try 160 CW With This Transmitter

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COVER: Photo of Judi Light, AKA Judi Repeater, courtesy of Charles Webb K0BWR.

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STAFF	120	BUYER'S GUIDE TO 2m FM TRANSCEIVERS

73 amateur radio

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COVER: Classic 1953 Riley 4 door, available from Peter Marsh, 111 Leroy Street, Binghamton NY 13905. Dress, available from Drazens City of Fashion, Binghamton. Model Karen Kelly is not available.

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3	Corrections	133	Allband VHF Receiver: Addition
3	Hotline Headlines		
4	Be My Guest	134	Repeater Update
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COVER: When you're in the repeater. This pioneer repeater, the most active 220 MHz re- and is the envy of many other facilities. Photo credit goes to goes to Arnold Chase WA1RYZ.

Hartford area, listen for lovely Cindy Tucker over the WR1AEC with one of the finest locations in the Hartford area, is one of peaters in the country. It has been on the air for about a year local repeater groups due to its clean operation and autopatch Bruce WA1GDX and credit for organization and production

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COVER: Photo provided by Alan Bridges WB4VXP, 2881 S. Main, Kennesaw GA 30144, who has 8x10 copies available for \$3 (or 20 IRCs). Order from Alan, but make checks payable to AMSAT, which gets the proceeds.

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COVER: The notorious Oscar Zapper, by Alan Bridges WB4VXP. Article begins on page 12.

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COVER: Oils on Masonite, by
Jerry W. Geiger, Delafield WI.

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COVER: Photo courtesy of Karl Schulte WA2KBZ. Article begins on page 160.

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COVER: WØACR's "Eyes for Your Shack." Article begins on page 74.

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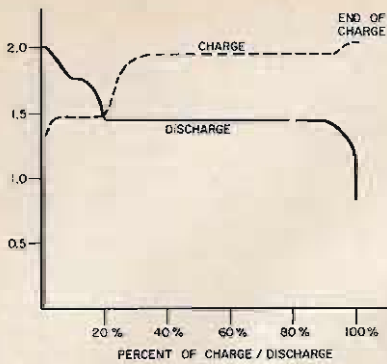


Fig. 2.

recoverable silver when the cell is discharged! Buy only dry charged cells that are unused, and preferably ones that are still sealed from the atmosphere. Once electrolyte

has been added, the life span of the cell ranges from six months to two years, with the high discharge cells having the least life span.

My main application for the cells is to power an RF Communications MARS issue RF-403 VHF transceiver. Using 9 Yardney HR-5DC-8 cells results in a handy-pack that could run the set on full transmit (20 Amps) for about 15 minutes of continuous transmission! Since the set draws only 150 mA on

receive and about 3 Amps on reduced power transmit, I typically get 10 to 12 operating hours between charges from a package that measures only 2.9 x 1 x 5.3 inches, and weighs only a little over 3 pounds! Obviously, the operating time would depend heavily upon the transmit to receive duty cycle. The size to energy ratio of these little jewels makes it worthwhile to search through your favorite surplus mart and invest in them. ■

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Warren Eilly WA1GUD/1

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An Improved HV Tube Socket

—easy modification

Harry J. Miller
991 42nd St.
Sarasota FL 33580

pulse voltage on the plate pin of the socket. This may cause an arc to the adjacent cathode or filament pin.

Socket replacement, while proper, may take considerable time.

I suggest that a slot be cut with a keyhole saw between the pins which are defective. This air gap between the defective pins now provides better insulation than the original socket. ■

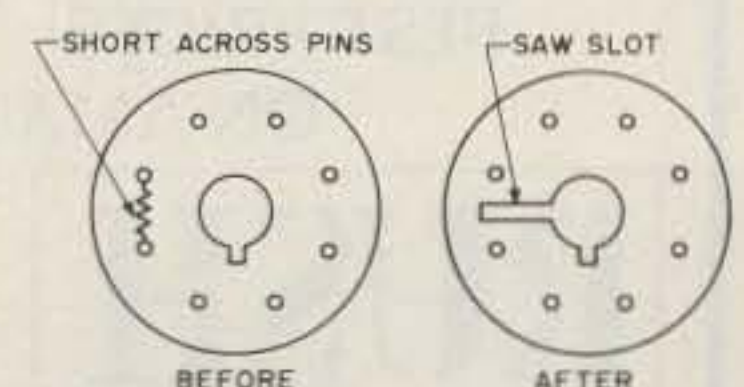


Fig. 1.

Vertical sweep amplifiers may have a high

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Ham Help

I need a manual for a Heathkit model IM-32 VTVM. I will gladly reimburse reasonable duplicating and mailing expenses, or I will duplicate on receipt and send back by return mail. Thanks.

Lawrence Young W1YVW
54 Samuel Ave.
Pawtucket RI 02860

I have a Pride HFL-125 Bilinear Amplifier and I need a schematic and information on the finals. Specifically, what replacement numbers could I use? I will pay for the postage and copy. Thank you.

Fritz Zingel KA2FCG
341 72nd St., Apt. B
North Bergen NJ 07047

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HAM HELP

Help!!! I am having difficulty in locating a schematic or operating manual for the following piece of equipment. It looks like a modem but I want to be sure. It has a transmit and receive section. The model number on the receive section is 1CRCU-RS-1. The model number on the transmit section is 1CTCU-RS-1. It carries the Burroughs Trademark on the case but it was manufactured by Stelma, Inc. Burroughs and Stelma, Inc., have not been able to help. Any information would be greatly appreciated.

Terry Hazelett
2107 Capitol Dr.
Parkersburg WV 26101

I need a schematic and/or instruction manual for a Collins 310B-1 exciter. I will buy a copy or reproduce one and return it. I also need an ac power supply

for a KWM-2A.

Herman F. Shnur K4CTG
115 Intercept Ave.
North Charleston SC 29405

I would like to correspond with people who have working models of computer-controlled or radio-controlled humanoid robots. Thank you.

Matt Beha N8BPI
3752 Lane Court
St. Joseph MI 49085

Our school amateur radio club is in need of the schematic and/or instructions for a Hammarlund four-20 transmitter. Payment for copies will be mailed or we will copy and send back if preferred.

Barringer High School
c/o F. Rice N2BVZ
90 Parker Street
Newark NJ 07105

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Compiled by:
 Jeff DeTray WB8BTH
 Tim Daniel N8RK

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For 900 MHz?			
Try the GHz Getter			

HAM HELP

I need a manual or a copy of it for the Globe Scout model 680-A. I will gladly pay all costs.

Dennis Cornell
7835 Captain St.
Millington TN 38053

I am looking for the following: MK 731/ARC-51X, H-157/AIC, H-158/AIC, ME-57/U, USM 281E, ME-11/U, URM-120, URM-127, O-1131/GRC, URM-103, AN/AIC-25, PRC-49, PRC-90, URC-10, ARA-50, SRD-7, URD-4, OA-3633/ORC, R442/VRC, RT524/VRC, PRC-74B, RT-862/GRC, R1051/VRR, 61BT, ARC-159. I also need modules for the following: ARC-58, SG-179A, AM1528B/URC, CV465C/URC, RE-284/URC, O-655/URC, MC-286B/URC, KY-305/URC, CV-466A/URC, CV-987/GRC-110A, AM1525/URC, AM-476C/AIC-10 unpotted, CU786/TRC-75, CU749/TRC-75, C2848/TRC-75, URM-124, MK-500/U, 878L-3, GRM-21, GRM-10, CU-523/ARC-58, C-1939/ARC-58, R1149/ARC-58(v), C-1940/ARC-58, R-1283/GRC, R484/APR-14, APR-13, URT-23(v), AM-1780/VRC, H-250/U, RT834/GRC, R1123/ARC-73, C-4074/RC-73, C-3940/ARC-94, URM-205, VRM-1, and USM-223. I am also seeking any documentation on the ARC-58, TRC-75, and ARC-159, and I would like to hear from anyone using the TRC-75.

Leroy Ritta
PO Box 102
St. Marys 5042
South Australia
Australia

I need the 20-meter heterodyne oscillator coil (part no. 40-771) for my Heath SB-301 receiver.

George Savino KV2V
368 N. Monroe Ave.
Lindenhurst NY 11757

I would like a schematic for an Allied Star Roamer receiver, number 22-3993-710042-713.

Joe Hustak WA5ZNO
6821 NW 27th St.
Bethany OK 73008

I am in need of videotapes (VHS format) of Novice- and General-class theory material. I also need good audio tapes for mastering Morse Code.

Robert M. Gallery
9214 Weathervane Place
Gaithersburg MD 20879

I need a 3CV1500 tube for my Alpha Vapor amplifier.

David Ornee KA9JKO
4615 Howard Ave.
Western Springs IL 60558

I need help correcting a severe drift problem in the Iml/vfo of my Heath SB-102. Anyone with information on this problem or who can fix it, please write.

Harold Wright K4MFN
Rt. 1 Box 259
Chancellor AL 36316

I am trying to find a 3-inch picture tube, type C6407, for a Symphonic model TPS-30 television. I would also be interested in buying the entire set if the picture tube is good.

Al Duester
179 Woods Hole Rd.
Falmouth MA 02540

I am badly in need of the manual or schematic for Navy surplus receiver R808/GRC-14, a unit of radio set AN/GRC-14.

Lee A. Grunewald K5JGZ
1020 K St. NW
Miami OK 74354

I need the construction manual and schematic for a Dycomm 2-meter linear amplifier. I will pay for the original or copying costs and postage.

Marvin Rosen N3BQA
20 W. Madison St.
Baltimore MD 21201

Wanted: 40-kV, 0-200-pF vacuum variable capacitor.

Cliff Young WA2GY
PO Box 790
Parker CO 80134

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HAM HELP

I have unfortunately lost the January, February, March, and April, 1961, issues of 73 as well as the November, 1962, issue. I will pay any reasonable price for those issues in good to fair condition.

William Ward DA2XA/W4PCK
USMCA Wuerzburg
CPO
APO NY 09801

I am looking for a schematic and power transformer data for a Knight wideband oscilloscope. I will pay shipping and duplicating costs.

Torgny Karlsson SM7CFQ
Sandormsvagen 7
S-260 41 Nyhamnslage
Sweden

I am looking for a manual for the Hammarlund HQ-100 receiver. I have manuals for the following available for trade: BC-348, ARR-16, Heath DX-40, Heath O-9 oscilloscope, TV-7U tube checker, ARN-6, and ARC-3-T67A.

Loren Willis
Box 282
Farmland IN 47340

I am searching for schematic diagrams, operating manuals, and service manuals for the Raynav 3000 LORAN-C navigation system. Please write before sending material.

Bruce Rahn WB9ANQ
410 Coronado Trail
Enon OH 45323

I would like to find some CB radios that were made from 1968 to 1972. I do not care whether they work or not, as long as the transformers are not burned up and they have crystals in them.

Tony E. Byrum
1449 N. Midwest Blvd. #402
Midwest City OK 73110

Wanted: info on the Electronica-360 10-meter mobile AM/SSB transceiver. I would like to modify the clarifier to operate on transmit as well as receive. I would also like to know if there is an American version of this European-market rig.

SSG Gary E. Kohtala DA2XF
USAFS-A, Box 1415
APO NY 09458

I would like to hear from US and foreign teachers, students, and radio clubs that want to participate in an educational resource net for public schools. I can also provide advice to those who are beginning or reactivating a school station.

Michael Henderson N6JFD
Box 331
Somis CA 93066

Can anyone provide information on the Airadio model TRA-10; Hewlett-Packard SHF generator model 670JM; AN/SRD-11 direction set; BC-1141-C and BC-1140-H mine detector set; PP-63 power supply; and 1-IJ-8 radio compass adapter, manufactured by Electronic Supply Co.?

John C. White WB6BLV
560 North Indiana
Porterville CA 93257

I am trying to get information on using TTL logic devices to control 117-V-ac outputs. I am using the information to help disabled persons, and any assistance would be appreciated.

S. Raigner N7BNP
626 NE Floral PL.
Portland OR 97232

I am desperately in need of the schematics and operating manuals for a Hallcrafters S-107 receiver and a Globe Scout model 680 transmitter. I will gladly pay for the cost of copying and mailing the documents.

Richard Metro KA2QWH
201-D Springmeadow Drive
Holbrook NY 11741

I need help in converting the "Open House" program, which appeared on page 72 of the January, 1979, issue of *Kilobaud Microcomputing*. The program was written in Wang Basic, and I would like to use it on a TRS-80 Model I, level II.

Lisle T. Hines K2QLA
4 Ellwood Ave.
Cortland NY 13045

I want to substitute a 4CX250 tube for the two 572B tubes in the Heath SB-200 linear. I think I have seen an article on it in one of the ham magazines. Can anybody help me locate that article?

Pete Govorko K6MMT
336 Demming Rd.
Sequim WA 98382

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New Orders for the R-109	low-cost surplus mods	K8AXH	Jun 70	Modern-Eyes the S-Meter	add-on signal strength meter	Patterson	Jul 24
On the Move with 10 FM!	quick mods for Comtronix FM80	W7AR	Jan 84	New Orders for the R-109	low-cost surplus mods	K8AXH	Jun 70
Quick Qwip Conversion Fax	restore surplus fax gear	KA9GDL	Sep 28	Painless Op-Amp Filter			
Watch a Warhorse Work	10 and 160 for the SB-221	W3JIP	Jul 48	Design	step-by-step instructions	W4RNL	Apr 102
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AEA	Doctor DX		Nov 76	REPEATERS			
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AEA	PKT-1 packet controller		Sep 85	Display	scrolling touchtone decoder	WA4TEM	Dec 8
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BHC	Big Ham Clock		Jan 110	Project	simple repeater controller	KT2B	Jun 42
Bird Electronic Corp.	4030 field-strength element		Aug 104	Sound Off!	repeater beeper indicates		
Break Communications	equipment console		Mar 109	Strictly for FM Deviates	received signal strength	K3JML	Jan 28
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CMC Communications	voice-operated squelch		Sep 86	B&W	ACL-8-30 antenna		Mar 102
ColoRadio Research	900B RTTY/ASCII/CW terminal		Jul 80	B&W	AP-10 portable antenna		Oct 84
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Connect Systems	CS-16 touchtone decoder		Jul 81	Bash Educational Services	Novice class study guide		Apr 129
ContactEast	1984 catalog		Jun 91	Belden	9913 coax		Dec 68
Crumtronics	Contender		Jul 80	Benchner	ST-2 paddles		Feb 92
Cushcraft	AOP-1		Oct 100	Bilal	Isotron 40		Oct 83
Cynwyn	HF antenna design software		Jul 81	Break Communications	equipment console		Nov 77
Davle Tech	SA-4 desoldering station		Sep 86	DX Enterprises	DX-1 propagation system		Sep 84
Design Electronics Ohio	QSK 1500		Aug 102	H. Stewart Designs	DX Hidden Asset antenna		Feb 92
Doppler Systems	direction-finding gear		Dec 65	Heathkit	SS-9000 transceiver		Jan 107
Electronic Specialists	interference protection		Jun 91	ICOM	IC-RP3010 70-cm repeater		Jul 82
Flesher	TU-1200 RTTY TU		Apr 117	ICOM	IC-271A		Sep 82
Gilfer Assoc.	Guide to RTTY Frequencies		Jan 111	ICOM	IC-37A		Dec 66
H. Stewart Designs	DX Hidden Asset antenna		Jan 110	ICOM	IC-751		Aug 101
HAL Communications	AMTOR-10A		Dec 65	Idiom Press	The Complete DXer		Apr 129
HAL Communications	PCI-2000 IBM RTTY interface		Nov 76	J.C. Labs	Action Monitor		Jan 108
Ham Industries, Inc.	PA-25 2-meter amp		Jan 111	Kantronics	AMTORSOFT		Aug 100
Hamtronics	COR-3		Dec 66	Kantronics	Interface II		Nov 81
Hamtronics	GaAsFET preamp		Jun 90	Kantronics	Introduction to AMTOR		Jan 108
Hamtronics	outdoor scanner antenna		Oct 100	Kenwood	TR-2500		Aug 101
Hamtronics	1984 catalog		Apr 116	Kenwood	TW-4000A		Jun 92
Heathkit	HD-3006		Dec 65	Mizuho	MX-6Z 6-meter hand-held		Nov 78
Heathkit	HD-8999 keyboard		Aug 104	NCG	7-21-50 transceiver		Dec 67
Heil, Ltd.	EQ300		Mar 108	N2NY	HamMaster tapes		May 117
ICOM	IC-HS10 headset		Mar 108	Rawn Company	Plast-i-Pair		Mar 102
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ICOM	IC-27H		Oct 100	Santec	ST-144/uP hand-held		Jul 82
ICOM	IC-37A		Jul 80	Sybox	Astronomy on Your Computer		Aug 101
ICOM	IC-471H		Sep 86	Ten-Tec	4229 Antenna Tuner		Oct 81
Info-Tech	M-44 AMTOR converter		Sep 85	TET	V/UHF discone antenna		Jan 108
International Crystal	FOT-12 alignment oscillator		Mar 109	Thompson Software	Morse-code translator		Jun 92
ISS	Halon extinguishers		Nov 77	Yaesu	FT-726R		Nov 80
J.L. Industries	Ham-Antuner		Oct 100	Yaesu	FT-980		Feb 90
Jensen	1984 catalog		Nov 76	RTTY			
John Vesty Co.	VIC-20 Hamware		Jun 90	AMTOR How-To	guidelines for operation	W2JUP	Aug 62
Kikusui	5060 60-MHz oscilloscope		Jul 80	Easy FSK for the IC-730	add what the factory forgot	WA4TTO	Sep 48
Larsen	CM-series cellular antennas		Jun 90	Join the Packet-Radio			
Larsen	NMO antennas		Oct 100	Revolution - Part III	protocols and procedures	WA7CXD	Jan 36
Lowrance Electronics	System 70		Feb 86	Ntty Grtty RTTY	complete Sinclair RTTY	WB6GTM	Sep 38
MCM Electronics	1984 catalog		Aug 104	Rampant RTTY	multi-speed dual-shift mailbox	K0WVN	Nov 50
MCM Electronics	Tenna DMM/DCM		Jun 91	The Terminal Terminal	Unit	K3PUR	Apr 70
MEC	Unimec modular switches		Apr 116	SSTV			
MFJ	MFJ-407 keyer		Dec 64	Color Computer SSTV			
MFJ	MFJ-1423		Mar 109	Part I	complete color SSTV system	K6AEP/WB8DQT	Nov 10
Micro Logic	design reference card		Dec 66	Part II	adding FAX to the board	K6AEP/WB8DQT	Dec 18
Microperipheral Corp.	modem jack		Oct 100	Peak Your Picture with			
Microtec	50DC1235 dc-to-dc converter		Jan 111	Home-Brew SSTV Gear	gray scale and color bars	Cikas	Feb 60
Moler Antenna	E-field displacement antenna		Jul 80	TEST GEAR			
Mouser	dip relays		Dec 64	Around and Around			
Nady	EasyTalk		Dec 65	and Around	Q-meter for coil winders	N7APE	Jan 70
NCG	7-21-50 transceiver		Jul 81	Calculate Your FT-101	digital display and counter	VK8DE	Feb 22
Nemal Electronics	TVRO control cable		Jan 110	Creason's Do-It DVM	single-IC digital voltmeter	K6EW	Jun 26
P.C. Electronics	TC-1 Plus ATV downconverter		Feb 86	Easy Berardi Building	.5 to 600 MHz counter	Berardi	Jun 10
Palomar	FL-4 audio filter		Nov 77	Find Fault with Your			
Rabbitt Ware, Inc.	Tutorcode		Mar 109	Coax	time-domain reflectometry	K4IPV	Oct 10
Radio School	code and theory tapes		Sep 86	Peak Your Picture with			
Regency	MX-5000 scanner		Sep 85	Homemade SSTV Gear	gray scale and color bars	Cikas	Feb 60
Regency	Z10 scanner		Apr 116	Penn's Two-Tone Gadget	dual tone generator	WIBG	Aug 21
Robot	1200C SSTV scan converter		Nov 77	Rx for Ailing Antennas	build a noise bridge	K4IPV	Oct 28
S.E. Corp.	eZ Board prototyping system		Jun 91	Strictly for FM Deviates	deviation meter for VHF	KA8OBL	Feb 36
SEA	1612 antenna coupler		Apr 117	Take the Two-Tone			
Simpson	1984 catalog		Nov 77	Challenge	two-tone generator for SSB	W8DCC	Mar 84
Smith Software	antenna design software		Oct 100	Tester Project: England			
Software Protection	Copyrightter		Feb 86	'84	multi-use transistor tester	Penfold	Jun 34
Spectrum Communications	SCR2000X repeater		Nov 76	POWER SUPPLIES			
Spectrum Communications	TTC300 DTMF controller		Aug 102	Cheap Power Ploy	12 V 20 A supply	K9QLL	Aug 10
Spectrum Projects	Voice Pak		Sep 86				
TAU	SPC-3000 ATU		Dec 64				
Telex/Hy-Gain	Ham-SP rotator		Mar 108				
Telex/Hy-Gain	hot line		Aug 104				
Telex/Hy-Gain	ProCom 352-IC headset		May 109				
Ten-Tec	Century/22		Aug 102				
Universal Electronics	RTTY Today		Apr 118				
Wahl Clipper	Oryx soldering system		Apr 117				
Yaesu	FT-757GX		Mar 108				

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THEORY				Build the NASA Beeper	simple courtesy beeper for HF	KQ4G	Mar 88
Around and Around and Around	Q-meter for coil winders	N7APE	Jan 70	Convert the Oddball Hy-Gain Board	CB boards move to 10 meters	N2DS	Feb 77
But I Know How to Solder!	basic soldering	WD4S	Nov 28	Top-Band Power Punch	kilowatt amp for 160 meters	WAOVNY	Aug 70
Counter-Productive Basics				Watch a Warhorse Work	10 and 160 for the SB-221	W3JIP	Jul 48
Part I	digital design fundamentals	K4IPV	Aug 40				
Part II	problems in counter design	K4IPV	Sep 8	VHF/UHF			
Digital Design: How to Interface ICs	connecting to the real world	K4IPV	Apr 30	Another Eggbeater	two-meter omni	WD5DNL	Oct 48
Find Fault with Your Coax	time-domain reflectometry	K4IPV	Oct 10	Crystal Microwave	microwave crystal receiver	WA4WDL	Apr 42
Give Your Micro the World	A/D conversion for the TRS-80	AIOZ	Dec 44	Disco Duckie?	HT headphones	N6CSI	Sep 36
Join the Packet Radio Revolution	protocols and procedures	WA7GXD	Jan 36	Elementary, My Dear: Watts 'n' Swr	stripline V/UHF wattmeter	KT2B	Sep 14
LEDs You've Never Seen	how they work	W5LFM	Mar 58	How to Gain with PVC	world's cheapest 2-m quad	WB6BHI	May 37
Op Art	using operational amplifiers	KCOEW	Feb 62	Perfect Timing	multi-use repeater ID	VE2DWG	Sep 22
Perfboard and Solder-tail?	pc board construction tips	W4RNL	Jul 42	Piggy-Bank Repeater			
Secrets of Nicads	the real truth about nicads	WB2FYW	Jan 88	Project	simple repeater controller	KT2B	Jun 42
Simple Parabolic Theory	dish design basics	OA4KO/YV5	May 52	Simple Parabolic Theory	dish design basics	OA4KO/YV5	May 52
Transistors: A Biased Approach - Part I	basic transistor theory	KCOEW	Dec 34	Sky Power	contacts via meteor-scatter	WB4CHZ	Mar 90
Try Low and Behold	are low antennas best?	W1GV	Oct 38	Stare-Way to Heaven	visit the Arecibo observatory	AJON	
Wet Battery Quiz	do you know everything?	VE3AZX	Mar 92	The Big-Car Break-Down			
When Darkness Calls	160-meter grayline prediction	VE7BS	Oct 66	Beam	two-meter fold-down beam	N3BEK	May 46
Your Own Optoelectronic Anemometer	intro to optoelectronics	K3VDB	Nov 42	Throw in TV	build a UHF helix	WA4WDL	May 64
				Wheeling and Dealing with Preamps	remote preamp switching	W8PMS	Apr 84

HAM HELP

We are happy to provide Ham Help listings free, on a space-available basis. We are not happy when we have to take time from other duties to decipher cryptic notes scrawled illegibly on dog-eared postcards and odd-sized scraps of paper. Please type or print your request (neatly!), double spaced, on an 8 1/2" x 11" sheet of paper and use upper- and lowercase letters where appropriate. Also, please make a "1" look like a "1," not an "l," which could be an "el" or an "eye," and so on. Hard as it may be to believe, we are not familiar with every piece of equipment manufactured on Earth for the last 50 years! Thanks for your cooperation.

I am a handicapped ham and would greatly appreciate any working equipment anyone would be willing to donate to set up a station. I have multiple sclerosis

and have been taken off work so I have no money for ham equipment. Anything you send will be so greatly appreciated.

J. T. Statham KA5UKP
1506 Sheila Dr.
McComb MS 39648
(601)-684-9558

I need a replacement power transformer for an NCX-A power supply or the name of a transformer rewinder.

Joseph Karr KA5RKD
RR1, Box 579
Lakeview AR 72642

I would like to get in touch with someone who would be interested in setting up a repeater in Wisconsin Dells or the immediate vicinity. The repeater would not only

be nice for hams who go there yearly, but also for hams traveling through the area.

Klaus Spies WB9YBM
8502 N. Oketo Ave.
Niles IL 60648

I have a Commodore PET 2001 and would like to hear from persons who have information regarding C-64/VIC-20 compatibility or who have a user's manual.

Dale Warner
815 Hwy. 190
Mandeville LA 70448
(504)-626-5801

I need information on how to improve the performance of the Drake R4-B, T4-X, and AC-4.

Walter Pereira da Costa, Jr. PY4ZO
Rua Daniel Xavier 414
PO Box 207
Araquari-MG Brazil 38440

I am looking for a schematic for a Sears Roadtalker-40 SSB/AM CB radio, model 663.38100050, for conversion to the ten-

meter band. I will gladly refund copying charges and postage.

Bill Springer KC9YJ
4014 N. Grant St.
Westmont IL 60559

I have a 23-channel Midland 13-882C Citizens Band radio. I would like to convert it to a 15-meter CW rig, but I have no idea how to do this. Can anyone help?

Lawrence R. Barley, Jr. KA4ROY
1427 Byron Ave.
Ypsilanti MI 48197

I would like a schematic and service information for a Hewlett-Packard model HP-130B oscilloscope. I will gladly pay copying charges and postage.

Bill Springer KC9YJ
4014 N. Grant St.
Westmont IL 60559

I am seeking technical assistance in modifying the TX/RX switching speed of a Yaesu FT-101ZD for use on AMTOR.

Daniel Murray WA7YIC
1541 Oxbow Circle RR #11
Billings MT 59101

NEW PRODUCTS

MFJ-407 DELUXE ELECTRONIC KEYS

MFJ Enterprises, Inc., introduces the MFJ-407 Deluxe Electronic Keyer to its line of amateur-radio products. The MFJ-407 features iambic operation with squeeze-key, dot-dash insertion, and semiautomatic operation that provides automatic dots and manual dashes. The keyer also features a dot-dash memory, self-completing dots and dashes, jam-proof spacing, and instant-start keying.

Solid-state keying is provided for use with tube or solid-state transmitters. Front-panel controls include linear speed, weight, tone, and volume controls as well as on/off, tune, and semiautomatic switches.

Weight control allows you to adjust the dot-dash space ratio, thus making your signal distinctive to penetrate QRM. A tune switch keys the transmitter for tuning.

The MFJ-407 is rf-proof, has a built-in speaker, and uses a 9-volt battery (not included) or 110 V ac with an ac adapter (MFJ-1305.) The keyer comes in an attrac-



MFJ's electronic keyer.

tive black aluminum cabinet with a black front plate. The unit measures 7 x 2 x 6 inches.

For more information, write MFJ Enterprises, Inc., PO Box 494, Mississippi State MS 39762. Reader Service number 480.

MOUSER RELAYS

Mouser Electronics announces its entry into the relay market with a quality line of DIP reed relays, the ME431-2000 series. Their DIP-style packaging makes them

completely compatible with in-line ICs, and the terminal patterns mate with standard 14-pin DIP sockets. They feature a stable transfer of low signal levels that minimizes interface buffering.

The relays are available in three standard contact forms—1A, 2A, and 1C. Their contacts are rated at 4 or 10 W, with switching currents of 0.3 or 0.5 A and a switching voltage of 30 or 100 V dc. They feature a minimum insulation resistance of 10¹⁰ Ohms and a maximum operation/release time of 1.0 ms.

For further details and for a free catalog, write or call Mouser Electronics, 11433 Woodside Ave., Santee CA 92076; (619)-449-2222. Reader Service number 476.

TAU SPC-3000 ATU

TAU Systems, Ltd., has announced a new addition to their line of antenna-matching units. The SPC-3000 ATU uses an infinitely-variable roller inductor and 5-kV air-dielectric capacitors arranged in an SPC configuration. A built-in 4:1 balun, rated at 1 kW, is also included.

The front panel sports a counter for the roller inductor, a five-position antenna switch, and two meters—one monitors forward power, the other swr. The unit will

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A New Angle for Dipoles	WA4BLC W1GV	super-short 160m wire the case for vertical dipoles	Nov 44 Sep 54	A Space-Saver Seven Megger							
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America's Dream Array	W0MSP AJON	new bands for old antennas National Radio Astronomy Observatory	May 50 Jul 18	Brew a Coffee Ground Plane							
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Non-Etched SWR Bridge	project for SWR	W6IOJ	SEP p.24				
Operators Aren't Standing By	solve your remote-control problems with a over featured DTMF decoder	Piechocki	JAN p.34				
PCBs From TEC-200 Film	make your own PCBs	K3OF	AUG p.43				
PC Infernos	consider doing a little micro surgery on a burned PC board	WB4YOD	FEB p.32				
Remote Base Control	Work DX from your HT	K9EID	DEC p.106				
Revive A Dying Swan	Swan 250 new life with a home-brew vxo	WA4UZM	MAY p.38				
Repeater Controller PC Board	build this inexpensive repeater board	KA3AAQ	NOV p.34				
Secrets of Silent Switching	say farewell to chattering, sticky relays	OA4KO/YV5	FEB p.28				
Semi-Rapid HT Charging	ICOM HT charging option	K3NXU	MAY p.34				
TV Tuner Scanner Converter	build a converter for a tuner and scanner and receive 800-900 MHz	W6WTU	OCT p.40				
Tesla High-Frequency Transformer	build this spark-excited transformer	VE7JON	NOV p.12				
The Glue Ribbon Solution	create your own conductive epoxy for low-resistance bonds	WB0NRU	JAN p.38				
The Cap Checker	build this simple analog capacitance meter	VE6BGL	MAR p.42				
The Two-Meter Transverter Project	build this VMOS transverter	W6YUY	JUL p.32				
The L'il Fixer	ultimate in simplicity	W9THN	SEP p.40				
The HF Half-Sloper	low-angle radiating wire antenna	W8DYF	SEP p.43				
VIC-20 Beam Rotor Interface	interface project for your VIC-20	N1II	NOV p.44				
CONTEST							
1986 15/20-Meter SSB Championships Results							
ANNOUNCING: 73 Magazine's DX Dynasty Award	join in the frenzy of DXing's newest and hottest award	KE7C	FEB p.101				
DX Dynasty Award	check out 73's new DX award	Staff	JAN p.27				
The National Championships	guile wins out over gigawatts	Staff	MAR p.44				
World SSB Championships	results of the 1986 40-meter fracas	KE7C	JUL p.30				
		KE7C	JAN p.53				
CW							
Cubic Inch Keyer	lambic keying on the HW-8	WB2EMS	NOV p.32				
KOKO-The Kids' Own Kode Oscillator	easy code Oscillator for the kids	K5JRN	FEB p.48				
GADGETS							
Battery Charger	A handy NiCd power project	N0FNF	DEC p.52				
ICOM BP-4 Charging Adapter	Our own technical editor beats the system	WB9RRT	DEC p.20				
Operators Aren't Standing By	solve your remote-control problems with a over featured DTMF decoder	Piechocki	JAN p.34				
Secrets of Silent Switching	say farewell to chattering, sticky relays	OA4KO/YV5	FEB p.28				
Tesla High-Frequency Transformer	build this spark-excited transformer	VE7JON	NOV p.12				
HUMAN INTEREST							
Dayton Digest	Dayton Hamfest	WA4BPI	APR p.32				
Future Packet	author predicts packet radio of the future	K2TKN	AUG p.24				
History of Handhelds Communications	Their Place in Western Communication	KT2B	DEC p.30				
History of ICOM 2AT	The World's Most Popular Handheld	KT2B	DEC p.18				
Horseflies and Grid Squares	amazing VHF/UHF DXing	KT2B	SEP p.33				
The Greenie	an account of a contest	K1YSD	NOV p.55				
You, Too, Can Be An SOB	join this elite society of ham radio operators	K9AZG	FEB p.44				
I/O							
C-64 Slow Scan	slow-scan television	WB9LYH	MAR p.34				
Operators Aren't Standing By	solve your remote-control problems with a Piechocki	JAN	p.34				
Make VIC Talk	This little chip offers big benefits	WA4DSO	p.50				
PC Infernos	consider doing a little micro surgery on a burned PC board	WB4YOD	FEB p.32				
Packet AI	speak with TRON	KE5L	AUG p.29				
Shoestring Software	forty-five Baud on a budget	W9ODK	FEB p.34				
Tap, Tap, Tap, Clunk	VIC-to-Teletype printer	N1II	FEB p.46				
VIC-20 Beam Rotor Interface	interface project for your VIC-20	N1II	NOV p.44				
MICROWAVE							
A Guided Tour of 1.2 GHz	23-cm band is the least understood Novice Enhancement	KT2B	JUN p.24				
Everyman's Microwave Amp	modification of a microwave cavity	KT2B	OCT p.24				
Gunn and IMPATT Devices	safe methods for testing microwave diodes	WB6IGP	OCT p.30				
Microwave Building Blocks:	complete plans for building your own microwave rig	WB6IGP	JAN p.40				
The Solfan Special							
Microwave Building Blocks—							
The Double-Balanced Mixer	enjoy superior performance	WB6IGP	OCT p.20				
Satellite TV Receiver Components	collection of circuits for 23cm	KB4MDR	OCT p.34				
TV Tuner Scanner Converter	build a converter for a tuner and scanner and receive 800-900 MHz	W6WTU	OCT p.40				
MISCELLANEOUS							
Consumer's Guide to HT's	A little help from your friends at 73	NASE	DEC p.28				
Dayton Digest	Dayton Hamfest	WA4BPI	APR p.32				
Novice Enhancement Buyer's Guide	anything one might want or need for new bands and modes	Staff	JUN p.34				
PCBs From TEC-200 Film	make your own PCBs	K3OF	AUG p.43				
Radio At Green Bank	impressive radio antennas	AJON	SEP p.16				
The Ducky Doctor	heat-shrink tubing	W6APZ	APR p.44				
The Glue Ribbon Solution	create your own conductive epoxy for low-resistance bonds	WB0NRU	JAN p.38				
Tube Terror	application for every tube in the warehouse	Thompson	APR p.42				
You, Too, Can Be An SOB	join this elite society of ham radio operators	K9AZG	FEB p.44				
Holiday Buyer's Guide	cornucopia of shopping tips	Staff	NOV p.20				
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The Cellular Phony Antenna	two-meter mobile antenna	WA2AJQ	APR p.38				
MODIFICATION							
Micro Morse	interface that fits just about any machine	WB8DQT	FEB p.40				
Revive A Dying Swan	Swan 250 new life with a home-brew vxo	WA4UZM	MAY p.38				
Semi-Rapid HT Charging	ICOM HT charging option	K3NXU	MAY p.34				
The Banker:	A memorable accessory for the TS-940 Kenwood	NA1A	DEC p.42				
The External PTT	get on packet with ICOM IC-2AT	WB5BSV	AUG p.49				
Tuner Transformation	automatic Heath SA-2500	Ferrand	APR p.46				
TV Tuner Scanner Converter	build a converter for a tuner and scanner and receive 800-900 MHz	W6WTU	OCT p.40				
Yaesu FT 209	Expanding your HT's horizons	KD2WA	DEC p.26				
NEW PRODUCTS							
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Antenna Elevator System	Glen Marin Engineering		JUL p.15				
CB On-Glass			FEB p.19				
Larsen AD-2/70 Antenna Duplexer			MAY p.15				
MJF New Antennas and Compact Speaker			APR p.18				
Mobile Antenna	Austin Tri-Band		SEP p.15				
NCG 900-MHz Antennas			AUG p.15				
Rotating Tower Hardware	Rotating Tower Systems, Inc.		JUN p.14				
Tri-Band 2m/1.25/70CM							
Suburban Fixed Antenna	Austin Suburban Antenna		OCT p.37				
Two New Antenna Tuners	MFJ Enterprises		SEP p.14				
Valor 2 plus 2			MAR p.18				
Wide Band Antennas	Poyntek Associates		OCT p.37				
Books Catalogs and Tapes							
ATC Guide			JAN p.19				
Audio IC Op-Amp Applications, Cable and Connector Guide	3rd Howard W. Sams & Co.		APR p.19				
Contact East	Nemal Electronics International		JUL p.15				
Davle Catalog	product guide		APR p.19				
First Book of Modern Electronics			MAR p.18				
Fun Projects and Second			JAN p.19				
Forrest Mims' Circuit Scrapbook II	by Art Salsberg		APR p.19				
Free Heath Catalog	from Modern Electronics' columns		APR p.19				
Free Midian Catalog			MAR p.18				
General Catalog from	ITT Pomona		JAN p.19				
Heath Magazine			DEC p.				
How To Read Schematics	by Don Herrington		JAN p.19				

Equipment

BVE EXFER		
Bird Model 4421	Bird Electronics Corp.	
CAE Little		
CES Model 5200 PI		
CSI CTCSS	Communications Specialists	
CSI Paging Encoder		
CSI Tone Output Switch Module	Communications Specialists	
CT-16 Satellite Interface Unit	ICOM	
Centurion Batteries		
Compact VOM		
Dash-Mounted CTCSS Encoders	Selectone Corp.	
Docking Booster	Naval Electronics	
Dual Band Docking Booster FT727	Naval Electronics	
EPI RF Amps	Electron Processing, Inc.	
Electronic Specialists Static Control		
HL-37V Compact Amplifier	Toyko Hy-Power Labs	
Hamtronics WXSAT Converter		
Heathkit Multi-Mode TNC		
ICOM IC-275		
ICOM IC-761	transceiver	
ICOM IC-375A	transceiver	
ICOM IC-1200	transceiver	
ICOM IC-900		
Jensen Stripper		
Kantronics KPC-4 Dual-Port Communicator		
Kantronics Personal Packet Mailbox		
Kantronics Dual Port Communicator	KPC-4	
Kenpro Interface		
Kenwood TR-751A		
Kenwood Dual Bander		
MFJ-1274 HF/VHF Packet TNC	MFJ Enterprises	
MFJ-931 Artificial Ground	MFJ Enterprises	
Mercer Pocket DMM		
Microphone Improved	Astatic Corp.	
Midland LMR	Two-Way FM Portable Radio Model 70-254	
Mini "Bear" Cat Scanner	Engineering Consulting	
Miniaturized DTMF-Encoders	Pipo Communications	
Miracle Flux		
Model 70-253 Portable Two-Way Radio	Midland LMR	
Model HL-725D Dual Band Amplifier	Toyko Hy-Power Labs	
Model S-4 Control Unit	Sibex	
Model TX70-1 ATV Transmitter	P.C. Electronics	
NCG Duplexers	NCG Company	
NCG Hotline-107 Hand Sets		
Net-Kall NK-1	Motron Electronics	
Nevada Caps	Nevada Communications	
Nevada Coil RC 26 "Roller Coaster"		
New All Mode ATV Receiver	Wyman Research	
News From Motron Auto Kall AK-10		
PC Weather	Technology Marketing, Inc.	
Phone Remote	Ti-Communication	
QFAX WX FAX Receive Terminal Unit	Quay Technologies	
Ramsey COM-3		
Regency Informant and Turbo-Scan 800		
Regency R-1090 Scanner		
Repeater Controller	Creative Control Products	
S-COM "5K"	Repeater Controller	
SR 100 and Smart Remote	Satellite Technology Services	
ST-216 Mobilecall Decoder	Selectone	
Scooter Standby Power Supply/ Voltage Regulator		
Simpson Probes	Mercer Electronics	
Super NiCd's for ICOM HTs	Periphex	
Super Small CTCSS Encoder	Communications Specialists	
SuperSCAF	AFtronics, Inc.	
THL HL-2K/A	Toyko Hy-Power Labs	
Teston's Checkman Mini		
The Banker	Inventron Labs	
The Regency R1080 Programmable Scanner		
Toyko Hy-Power Labs 160-W 2-Meter Amp		
Two New ICOM Base Station Transceivers		
Weller Pyropen		
Yaesu FT-109RH and FL-7000		

Filters

Active Audio Filter	Bel-Tek	AUG p.15
IRI Filters	International Radio, Inc.	FEB p.19
New 8-Pole Crystal Lattice Filters	International Radio	SEP p.15

Kits

Chip Resistor and Capacitor Kits	Communications Specialists	OCT p.37
DSE Field Strength Meter Kit	Dick Smith Electronics	MAY p.15
Jensen Tools, Inc.	service and maintenance kits	APR p.19
New Heathkit Linear Amplifier Kit		SEP p.14
RFI-Free Choke Kit	MFJ Enterprises	AUG p.15

Tools

Butane Energized Soldering Iron	Eaglestone	JUL p.15
Davle Tech Tools		JAN p.19
E.L. Jones Quick Silver	bonding paste	JUN p.15
Ergotron Inc.	Engineering Workstation	DEC p.40
Jensen TELVAC Tools		MAR p.18
Jensen Ultratorch		MAR p.19
Personal Grounding Wrist Strap	Davle Tech Inc.	DEC p.40
Rechargeable Screwdriver	Davle Tech, Inc.	FEB p.19
Rota-Lux And Rota-Tough	by Jensen Tools Inc.	NOV p.58
Soldering/Desoldering Station	by Sibex	MAY p.15
Sun-Flex Screens		MAR p.18

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Commodore 64/128 Terminal Program	Kantronics	AUG p.15
HF-Link Hardware and Software		JUL p.15
Laresco Code Software		MAR p.19

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for the Commodore 64	MFJ Enterprises	DEC p.40
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PACKET		
Big Time Packet	control a packet station from your desk or around the world	K1TE JUL p.44
Future Packet	author predicts packet radio of the future	K2TKN AUG p.24
Packet RATS	resume-after-transmit scanner for IC-27A	WA3DNM MAY p.30
Packet AI	speak with TRON	KE5L AUG p.29
Packet Directory	packet digipeater or PBBS anywhere with this directory	K4NGC AUG p.33
The External PTT	get on packet with ICOM IC-2AT	WB5BSV AUG p.49
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A Power Supply Primer: Part II	straightening out the ripples for the wall socket's ac	K4IPV JAN p.28
Battery Charger	A handy NiCd power project	N0FNF DEC p.52
ICOM BP-4 Charging Adapter	Our own technical editor beats the system	WB9RRT DEC p.20
QRP		
QRP Antenna Farming	work the world with a few Watts	W0VM APR p.36
RECEIVING		
Cosmic QRN	hidden messages lurking in the static!	W6HDM FEB p.50
The Talking Teletype	basic RTTY-to-voice system	K9EI FEB p.36
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Repeater Controller PC Board	build this inexpensive repeater board	KA3AAQ NOV p.34
Repeater Renaissance	digital repeater	WA6AXX MAY p.26
REVIEWS		
144-MHz Antenna Test: Three For Two	Cushcraft vs. Tonna vs. Cushcraft	KT2B JAN p.22
220 Amps: Toyko Hy-Power Labs	HL-22V and HL-102V 220-MHz Power Amplifiers	KT2B APR p.26
220 Toss-up:	ICOM's IC-38A and Kenwood's TM-3530A 220-MHz Mobile Transceivers	KT2B JUN p.18
Alinco ALX 2T	A big contender in the feather weight class	KA1HY DEC p.16
A Tale Of Two 220 HTs:	Yaesu FT-109RH and the ICOM IC-02AT	KT2B SEP p.28
Beginner's Luck Heil's handbook	for the rank amateur	KA1MPL JAN p.26
Cadillac Of HF Rigs:	ICOM IC-781 Transceiver	WA4BLC OCT p.12
Digitize Your Dial:	Torretronics' Universal Digital Frequency Display	WA1WMZ/2 JUL p.27
First In Filtering:	AFtronics' SuperSCAF	W4THU JUL p.22
Good 'n' Cheap:	Dick Smith Electronics Function Generator Kit	KA1MDA MAY p.24
Great Little Dipper:	Electronic Bank's DM-4061 Dip Meter	WA4BLC NOV p.10
HW-8 Replacement:	the HW-9 third generation QRP transceivers	W8VGE AUG p.22
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ICOM 12-AT:	Breaking new ground on 23 cm	KT2B DEC p.22
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Including The Kitchen Sink:	ICOM's IC-275A 2m Multimode	KT2B MAR p.20
Inside ICOM:	what's different about IC-751A	N1BLH JAN p.20
It's More Micro:	ICOM IC-μ2At Two-Meter HT	WB2MIC MAY p.20
Kenwood TH215A:	High-Class Hand held hammering	N1BLH DEC p.13
Kenwood 205A:	High-Class Hand held hammering	N1BLH DEC p.13
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Long Time Coming:	Microwave Modules' MMT 220/28 220-MHz Linear Transverter	KT2B MAR p.22
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Move Fast:	Stone Mountain Engineering QSYer	Z2IEI JUL p.26
New On Two:	Alinco's ALR-206T 144-MHz FM Mobile Transceiver	KT2B MAR p.24
New Life On Two:	Yaesu FT-290R II and the Tonna F9FT Yagi	KT2B JUL p.18
No Vertigo:	Glen Martin Engineering M185A Tower	N1EJF APR p.21
Novice Rig:	Heath HW-99 Transceiver	KA9HCC and KN2F APR p.30
Novices Take Note:	Ranger AR-3300 10-Meter Mobile Rig	N1BLH NOV p.28
On Target:	Telex/Hy-Gain's model 218S OSCAR antenna system	N1EJE FEB p.22
Jan Crystals Booklet		JUN p.14
Novice Voice-Class "Quick Course"	Gordon West Radio School	AUG p.15
Power Gain Systems, Build Your Own		JAN p.18
Satellite Dish Antenna	by William I. Orr	APR p.19
Radio Handbook		JAN p.18
Repeater Demo Tape	Heath Computerist Journal	MAY p.15
SEBHC Journal Society of Eight-Bit		
Shortwave Radio Listening	with the Experts	by Gerry L. Dexter APR p.19
Solid-State Projects You Can Build		by Rudolf F. Graf APR p.19
The Digital Novice		QSKY Publishing APR p.19
Understanding Electricity and	Electronic Principles	by Training & Retraining APR p.19
Understanding Electricity and	Electronic Circuits	by Training & Retraining APR p.19
Understanding IC Operational	Amplifiers, 3rd Ed.,	by Roger Melen and Harry Garland APR p.19
Universal Electronics Publications		JUN p.15
World Ham Net Directory	by Mike Witowski	MAY p.15

Equipment

1.3-GHz Pocket Counter		JAN p.19
33-CM ATV Exciter/Modulator	P.C. Electronics	MAY p.14
220 Transceiver	Microwave Modules	FEB p.18
Ace AR-2002	Ace Communications	MAR p.19
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A Guided Tour of 1.2 GHz	23-cm band is the least understood Novice Enhancement	KT2B	JUN	p.24				
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40 Meters In A Nutshell	7-MHz transceiver	KG5B	MAR	p.26				
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Yaesu FT-209								
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Gunn and IMPATT Devices	safe methods for testing microwave diodes	WB6IGP	OCT	p.30				
Linear ICs	ICs primer	K4IPV	OCT	p.26				
The Digital Novice	basics of a ham's digital world	K9EI	JUN	p.28				
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Signal Strength Reporting	answer to "S-9, OM"	W2OZH	NOV	p.15				
VHF/UHF								
220-MHz Portable Pocket J-Pole	a low-cost quickie with more dB-gain	KB6MIF	SEP	p.27				
440-MHz Repeater Antenna	build this antenna in the public safety and commercial spectrum	WB2EDV	SEP	p.41				
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History of ICOM 2AT	The World's most popular Hand held	KT2B	DEC	p.18				
Horseflies and Grid Squares	amazing VHF/UHF DXing	KT2B	SEP	p.33				
The Cellular Phony Antenna	two-meter mobile antenna	WA2AJQ	APR	p.38				
The L'il Fixer	ultimate in simplicity	W9THN	SEP	p.40				
The Two-Meter Transverter Project	build this VMOS transverter	W6YUY	JUL	p.32				
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Yaesu FT-209	Expanding your HT's horizons	KD2WA	DEC	p.26				

HAM HELP

Your Bulletin Board

We are happy to provide Ham Help listings free, on a space available basis. To make our job easier and to ensure your listing is correct, please type or print your request clearly on a full (8½ x 11) sheet of paper. Double space and use upper and lower case letters where appropriate. Also, write numbers carefully—a 1, for example, can be read as an l or an i or a 7. Thanks.

I am looking for a code practice program for my CoCo (Radio Shack's color computer).

Brandon Armstrong
635 Chamberlain #8
El Cajon CA 92020

I am looking for modifications, additions, and improvements for the HAL ST-6 Teletype converter. Also, need manual and schematic for TS-888 Teletype test set.

Marvin Moss W4UXJ
P.O. Box 28601
Atlanta GA 30358

Need service info for the following. I will purchase or pay copy cost. Unicom Electronics Power Supply Model Ps-11R, Tandy 64K

Color Computer II Model 26-3127, EMP/GTS Manual Mini Modem Model MM-101 (manufactured by Elec and Johnson Messenger CD Model 323, Apple IIe Pro System Duo-Disk, Imagewriter, Printer Monitor II, ICOM Model 735 Ham Transceiver, Loonam Assoc. Modem Model FM30, Designers for Industry Mutual Conductance Tube Tester Model TV2CU (F.A.A.), Amplifier/Marker Jerrold Model CM-6C (F.A.A.), Signal Generator URM-64A/TS-419, and RCA Video Disc Player Model SGT-250.

Need the following. Please state price and/or condition in correspondence. Two (2) Transistors MRF 455 A; Five (5) Tubes 7868; Ten (10) lamps #12 6V for Bogen PA Amps; One (1) Each Bandswitch for Panasonic rF 2800 Receiver #RSR 98W or Equivalent; One (1) Printer and Disk Drive for the Tandy Color Computer II Model 26-3127 and One(1) each Z-80/CPM for the Apple IIe Pro System.

Mike Adams
Haney Vo-Tech Center
3016 Hwy 77
Panama City FL 32405

I need schematic and service info for a Tektronics model 502 Oscilloscope. Will gladly pay copying and mailing costs.

Gordon Fulp
4740 Scotch Pine Lane
Placerville CA 95667

Can anyone supply a photostat or other copy of the Electronics Illustrated article (circa 1970) that dealt with the schematic and power supply for the micro oscilloscope featured in the January 1970 issue.

Randy White KB4ALH
506 Robinhood Dr.
Seneca SC 29678

I am seeking schematic and alignment data for a National NC-109 Communications Receiver. First submission gets payment, if not prohibitive. Submit proposal.

Lloyd Williams KA0ZCY
RR 1, P.O. Box 248
Baxter Springs KS 66713

I am looking for a manual or schematic for COMMERCIAL TRADES INSTITUTE SC 36 Scope. Needs a transformer.

Jim Wisdom K4HCG
3308 Cobblestone Ct.
Raleigh NC 27607

I am looking for other people who have built the project found in the May '80 issue of 73, called "The Beachside 2-Meter Beam"

(p. 132). I've built it, but have tried everything without success to get rid of the high SWR, and to even get some range on it. Please share your success tips with me.

Dick Wolf N8IHN
1890 Big Trail Rd.
Walled Lake MI 48088

I am looking for a manual or any information on a Gonset G-150 Business Communicator. It appears to be a single channel VHF transceiver, but I have no x-stal information. Would gladly pay costs for copying manual, or would make copy of your original and return. Thanks and 73's.

Daron Wilson N7HQR
P.O. Box 714
Toledo, OR 97391

EICO 470 o'scope power transformer needed. Anyone out there have a junker scope with a good transformer? Send price to:

Pete Haas
P.O. Box 702
Kent, Ohio 44240

I'm looking for a manual/schematic/calibration procedure for a Boonton RF Voltmeter, Model 91CA. Also a manual/schematic for a Realistic DX-150-B receiver.

James W. Lee
WB4GWX/AAV6UX
5004 Ridge View Court
No. Richland Hills, TX
76180-2521

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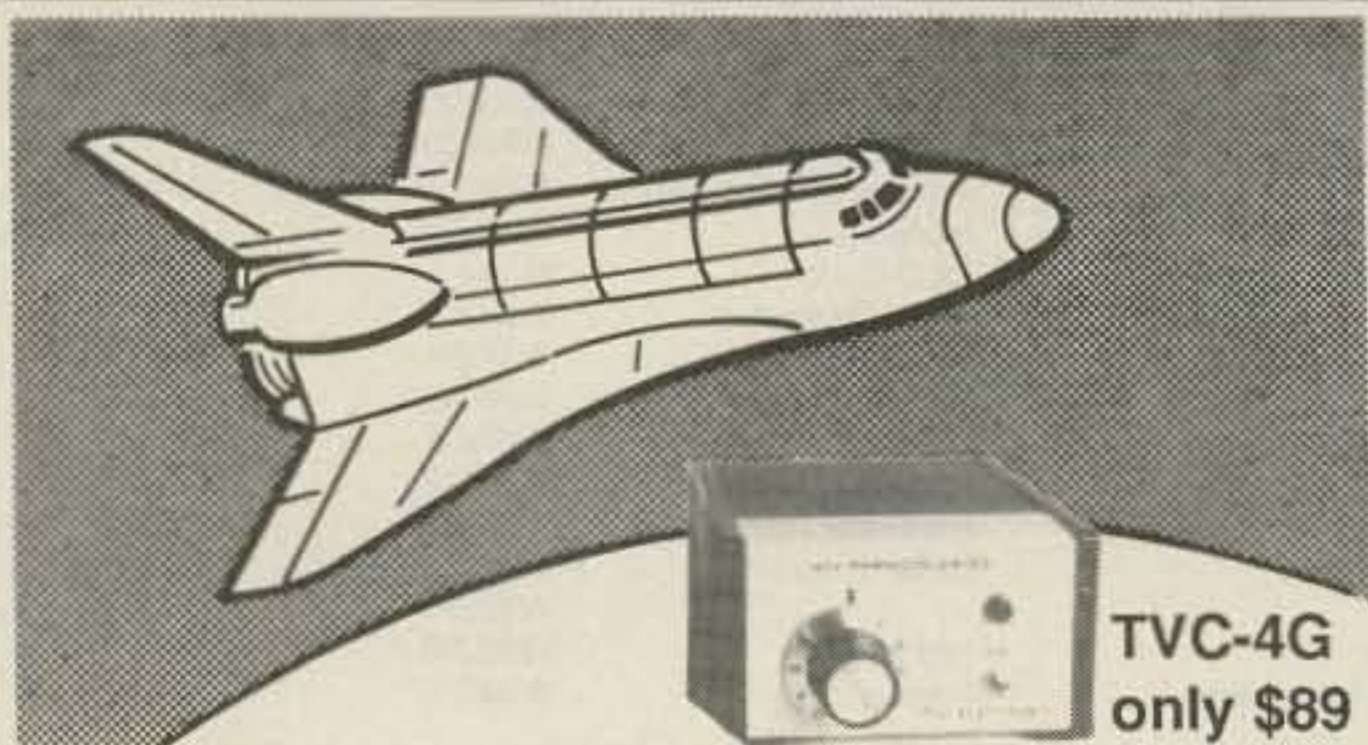
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14. Title of Publication 73 Amateur Radio		
15. Publication No. 08895309		16. Date of Filing 7/21/90
17. Frequency of Issue Monthly		18. Annual Subscription Price \$24.97
19. Complete Mailing Address of Known Office of Publication (Street, City, County, State and ZIP+4 Code) (Not printer)		
Forest Rd., PO Box 278, Hancock NH 03449-0278		
20. Complete Mailing Address of the Headquarters or General Business Office of the Publisher (Not printer)		
Forest Rd., PO Box 278, Hancock NH 03449-0278		
21. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor (This box MUST NOT be blank)		
Publisher Name and Complete Mailing Address: Wayne Green, Forest Rd., Hancock NH 03449-0278		
Editor Name and Complete Mailing Address: Wayne Green, Forest Rd., Hancock NH 03449-0278		
Managing Editor Name and Complete Mailing Address: Bill Brown, Forest Rd., Hancock NH 03449-0278		
22. Owner (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual must be given. If the publication is published by a nonprofit organization, its name and address must be stated.) (This box must be completed.)		
WGE Publishing Full Name Complete Mailing Address Forest Rd., Hancock NH 03449		
23. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages or Other Securities (If none are listed, so state)		
NONE Full Name Complete Mailing Address		
24. For Completion by Nonprofit Organizations Authorized to Mail at Special Rates (GSM Section 412.12 only) The purpose, function, and nonprofit status of this organization and the exempt status for Federal income tax purposes (Check one): <input type="checkbox"/> Has Not Changed During Preceding 12 Months <input type="checkbox"/> Has Changed During Preceding 12 Months (If changed, publisher must submit explanation of change with this statement.)		
25. Extent and Nature of Circulation (Give estimates on vendor bills)		Average No. Copies Each Issue During Preceding 12 Months
A. Total No. Copies (Net Press Run)		89980
B. Paid and/or Requested Circulation 1. Sales through dealers and carriers, street vendors and counter sales		16478
2. Mail Subscriptions (Third-class if requested)		27482
C. Total Paid and/or Requested Circulation (Sum of B1 and B2)		43960
D. Free Distribution by Mail, Carrier or Other Means Samples, Complimentary, and Other Free Copies		750
E. Total Distribution (Sum of C and D)		44710
F. Copies Not Distributed 1. Office use, left over, unaccounted, spoiled after printing		3970
2. Return from News Agents		21300
G. TOTAL (Sum of E, F1 and F2 - should equal net press run shown in A)		71342
26. I certify that the statements made by me above are correct and complete		Signature of Publisher, Business Manager, or Owner David Lundy ASSOCIATE PUBLISHER

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been mercilessly harassed by FDA teams and the AMA just for experimenting with the bioelectrifier. His results, with cancer, HIV, and so on, have been so spectacular that he's opening a clinic in Costa Rica to get away from the FDA threats and to make this marvelous way of saving lives available to more people.

Yes, I know, when I started writing about the bioelectrifier (blood purifier) back in 1994, you thought Wayne was nuts again. I'm used to that. Well, it saves many readers from bothering to think or do any homework. I was crazy when I predicted that the whole world would want to share our repeater technology. Back in 1969 I was making phone calls anywhere I wanted with my Motorola

HT-220 from the New Hampshire ski slopes via my repeater. Then I was able to do the same when skiing in Aspen. I was so excited that I published hundreds of articles and book after book on repeaters. The result of the ham development of repeater technology was the worldwide cell phone system of today. Crazy Wayne.

Then the first microcomputer came along a few years later. The computer industry bigwigs said they were toys and that I was crazy when I said they'd eventually be in millions of homes and be on just about every desk in businesses. Those bigwigs are all out of business now.

The music and hi-fi magazines all sneered at CDs. Crazy Wayne started *CD Review*, which soon became the biggest music magazine in the world.

Have you built a bioelec-

trifier yet? What's stopping you? The parts cost under \$20. Maybe you're waiting until your lifestyle knocks you on your ass before I'm able to get your attention. I've published two articles on how to build the device, but they're all sold out. The Miller circuit, plus a simpler one by Bob Beck, are in the *Bioelectrifier Handbook*, which is \$10. See my ad on page 63. This book includes instructions on how to use it.

The electronically challenged can buy a Plant Growth Stimulator unit for \$155 ppd. from Butterfly Products, Box 1729, Hillsborough NH 03244. It has essentially the same circuit and will, if you use it as intended, stimulate the hell out of your plants. This unit also includes pure silver wire and will make silver colloid for you.

Or you can get in touch with me for the address of the

clinic in Costa Rica and save yourself the trouble of building a bioelectrifier.

A better approach, I feel, is to change your lifestyle so you won't need emergency repairs. Why wait until cancer, a heart attack, stroke, diabetes, arthritis, multiple sclerosis, and so on have hit?

And one of 'em surely will unless you make some big changes.

In All Fairness

An Irish television producer called. He was doing a program commemorating the Moon landings of thirty years ago, and one of his crew was a ham who had a copy of my *Moondoggle* book. Would I be available for an interview to present the contrarian side? The program would run from about 11 p.m. my time to 5

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Hmm, and how interesting will the contacts be? Will you QSL yourself? For that matter, what proof will there be?

Loop Antennas

Joe Carr K4IPV has authored a 133-page 8.5- x 11-inch book which has everything and a half that you'll ever want to know about loop antennas. It covers desktop loops, yard-filling loops, and room-sized loops for the antenna-challenged. Loops for any band.

Sure enough, there on page 36 was the Bi-Square Loop antenna. That's the one Sam Harris W8UKS out in Cleveland used to work all around the world on 75m with his

Collins 32V, running 120 watts input on AM. When I'd get on with my cool kilowatt and a dipole the guy Sam was talking with in South Africa would say, Let's standby, I hear a faint heterodyne, so someone may be wanting to join us.

The book is \$20. If your ham store doesn't have it in stock you can get it from Universal Radio for \$2 s/h, 6830 Americana Pkwy., Reynoldsburg OH 43068 [www.DXing.com].

A Basic Decision

There are three fundamentally different career paths for youngsters to pursue in life, and the education for each of these is quite different. Thus, schools (and colleges in

particular) should decide for which path they are going to prepare their graduates.

Having been consulted by several college presidents, having interviewed a few more as part of my work with the Educational Subcommittee of the New Hampshire Economic Development Commission, and having read several shelves of books on education, I'm convinced that neither the public nor educators have considered this concept. And that's resulted in a massive waste of time and money for students, faculty, and schools.

The three career paths? One path is in preparing for a job. The second is preparing to own one's own business. And the third is in the arts, as a creator or a performer — like actors, playwrights, artists,

musicians, composers, and so on.

There are many things all three career paths have in common, such as a need to be able to read and write, a knowledge of history, and basic math skills.

Business owners in high-tech fields will need to have a good background in math and physics. But from there it should be their personal interest which dictates whether they are going to specialize in electronics, computers, radio, chemistry, biology, and so on.

This is a particularly difficult time for school administrators who have the responsibility for planning ahead. The world changed enormously when the agricultural revolution

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NEVER SAY DIE

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What about the ARRL, you ask? The only belief I have in the League is that someone should wake up the gang sleeping at HQ and tell them to get their ass in gear and start promoting the hobby before it dies. Maybe you can energize your local director to do more than rubber stamp what the HQ gang asks for at the next board meeting.

Have you even a remote clue about how much the number of licensed amateurs has grown in the last five years? Make a guess? Wrong! It was 0.5%. Compare that to the 1946-1963 17-years of 11% per year growth — a five-year growth of 168%.

You know what I'd like to see? The ARRL do a survey of today's ham activity on the bands. They could get volunteers ... retired hams ... to do signal

counts on our HF bands once an hour 24/7 for a couple of months. Maybe from Washington, Southern California, Texas, Maine, and Florida. I'll bet they'll find that there are a lot less than 100,000 active U.S. hams on the HF bands. I'd like to be wrong, but never in my 64 years on the bands have I heard them so empty.

I'm going to keep hacking away at the public's belief in doctors, hospitals, and prescription drugs, using common sense and damned good research as my weapon. I'll leave it to you to either activate the League HQ gang or see our hobby blow away through your neglect. Every time you renew your ARRL membership you are making sure that HQ does nothing. That's the only vote you have.

Jet Lag

Pretty soon you'll be seeing jet lag

prevention glasses in the gadget catalogs. They'll have blue LEDs built in, powered by a 9V battery in your pocket. You wear them for three hours a day for two days before your trip and three hours during the trip. No jet lag.

I keep such weird hours at home that my body is never sure when to give me jet lag on trips to Europe or Asia. At home I go to bed when I get tired, whether it's 7 p.m. or 2 a.m. I sleep until I wake up, and take an hour nap during the day if I get tired. Works for me.

Health Notes

A daily banana helps ward off strokes. It's the potassium. Oranges help, too. Hmm, I eat a couple bananas and an orange for breakfast every day.

Optimists are healthier and live longer, according to a Mayo Clinic study.

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Reprints: \$3 per article
Back issues: \$5 each

Printed in the USA

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JANUARY 2003
ISSUE #506

THE NEW! 73 Amateur Radio Today

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COVER: House and antenna of Romeo HI3BRR, Santiago, Dominican Republic. Photo by SMØJHF.

QRX . . .

Dollar Power

Take out a one-dollar bill and look at it. The one-dollar bill you have first came off the presses in 1957 in its present design.

This so-called "paper" money is in fact a cotton and linen blend, with red and blue minute silk fibers running through it. It is actually material. We've all washed it without it falling apart. A special blend of ink is used, the contents we will never know. It is overprinted with symbols and then it is starched to make it water resistant and pressed to give it that nice crisp look.

If you look on the front of the bill, you will see the United States Treasury Seal. On the top you will see the scales for a balanced budget, and for fairness. In the center you have a carpenter's square, a tool used for an even cut. Underneath is the key to the United States Treasury. That's all pretty easy to figure out, but what is on the back, of that dollar bill is something we should all know.

Turn the bill over and you will see two circles. Both circles together comprise the Great Seal of the United States. The First Continental Congress requested that

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THE TEAM

FEBRUARY 2003
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QRX . . .

Here's Lookin' at Ya

Let's turn our eyes toward the planet Venus. Just our eyes. Not our telescopes. Because if we do use a telescope we might make the very same mistake made by a very famous astronomer regarding canals on that mist-shrouded planet.

Turn-of-the-(last)-century astronomer Percival Lowell is well known for promoting the incorrect notion

that water canals had been built on the surface of Mars. He also drew a map of the "canals" on Venus; the only problem was that no one else could see anything resembling canals, because Venus is always covered by clouds.

Turns out that Lowell had narrowed the aperture of his 24" telescope down to about 3" to attenuate

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Printed in the USA

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Why Computers Crash

If a packet hits a pocket on a socket on a port,
And the bus is interrupted at a very last resort,
And the access of the memory makes your floppy
disk abort,
Then the socket packet pocket has an error to report.

If your cursor finds a menu item followed by a dash,

And the double-clicking icon puts your window in
the trash,
And your data is corrupted 'cause the index doesn't
hash,
Then your situation's hopeless and your system's
gonna crash!

If the label on the cable on the table at your house,

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Business Office
Editorial - Advertising - Circulation
Feedback - Product Reviews
73 Amateur Radio Today Magazine
70 Hancock Rd.
Peterborough NH 03458-1107
603-924-0058
Fax: 603-924-8613

Reprints: \$3 per article
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UK Ticket Changes

The amateur radio license structure in Great Britain is currently undergoing a major shakeup. There are currently 5 classes of amateur license dependent upon skill level and Morse proficiency. The callsign prefix denotes license class and geographical location within the UK.

The lowest class is the Foundation license. This requires a very basic knowledge of electronic theory, license conditions, interference avoidance and

operating practices. The ability to recognize Morse code is required, but no significant proficiency in sending or receiving. This gives access to all bands except 10 meters with a maximum power of 10 watts. The license is obtained by attending a weekend or evening training course. The callsign is in the form of M3XXX.

The next license class is Intermediate. This requires a more in-depth knowledge, plus the building of a

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QRX...

Wouff Hong and Rettysnitch

a. "The Wouff-Hong is amateur radio's most sacred symbol and stands for the enforcement of law and order in amateur operation."

b. "The Rettysnitch ... is used to enforce the principles of decency in operating work."

— *The Radio Amateur's Handbook*, 1930, p. 11.

In 1930, the *Handbook* had pictures of both instruments of enforcement. By 1936, only the Wouff-Hong appeared, and by 1947, the *Handbook* had deleted both photos. Just when we needed traditions of law and order and of decency in amateur operations to

guide its growth in the post-World-War II explosion of technology and easier licensing, the symbols had disappeared from view.

Many of today's hams have no idea what a Wouff-Hong and a Rettysnitch look like. To rectify that gap in hamdom's essential history: The two main pieces appear to be wood banded by metal strapping and by heavy wire. What the sketches cannot convey is the darkness at the upper end of the longer wood piece, as if stained by blood or purified for its grave duties in the fires of purgatory — or both.

The Rettysnitch is an all-metal tool. Of the five teeth

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QRX . . .

WA6ITF: "Dear Friends, Listeners, (and 73 Readers) ..."

I'm Bill Pasternak WA6ITF, and since 1977, I have been the unpaid volunteer producer of what is today the *Amateur Radio Newslines*. You often read our material here in this QRX column. I am here for one reason. In just one word, money. Money to keep *Amateur Radio Newslines* in operation.

Simply stated, *Amateur Radio Newslines* is once again in deep financial trouble and we need an immediate infusion of funds to keep the service alive and the weekly newscasts coming your way.

Here's the score. As this is being written [April 14], our Support Fund Administrator, Andy Jarema N6TCQ, says that there is only \$24.80 left in the Newslines Support Fund bank account. There are also outstanding bills totaling \$661 sitting on his desk that must be paid immediately.

No extensions of time will be given to us. No delays will be entertained. These creditors — namely telecommunications providers — want to be paid right now. Otherwise, our ability to communicate goes away and the news gathering process grinds to a halt. It could happen before the next newscast gets to you a week from now.

Actually, you would not have heard this week's *Amateur Radio Newslines* report (#1339) if I had not

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Smart Guy, Eh?

Could you pass a 1940 test? Here are a few questions and answers from one.

Ques: Why is full-wave rectification generally preferable to half-wave in a power supply?

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An iambic beginner tries out the MFJ-564 paddle.

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Death, Taxes, and the Phone Company

Well, some are calling it a new way for the telephone company to try to communicate with the dearly departed. A resident of the town of Auburn, Massachusetts, died in December of 1997 at age 60. He was buried at the nearby Hillside Cemetery. So it was quite a surprise for the Cemetery Superintendent to receive a bill addressed to the deceased at his graveside.

Even more shocking was the amount of the bill from Sprint. It was for 12 cents. That's right: A big 12 cents, and it included a 10 cent charge for a call placed on February 16, 2003 — a call that the phone company claims was made five years after the man had departed from his life.

Well, the bill has been handed over to the Auburn Town Clerk. She says that she will hold on to it for a while.

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AAADD

That's Age-Activated Attention Deficit Disorder to you, and here's how it goes ...

I decide to wash the car and start toward the garage, when I notice the mail on the table. I figure I might as well go through the mail before washing the car.

I lay my keys down on the desk, sort the mail and

discard the junk mail. As I discard the junk mail, I see that the garbage can is full.

I lay the bills down on the desk and pick up the trash can. Then I figure that since I'll be going near the mailbox while taking out the trash, I may as well pay these few bills first. Now where did I put my checkbook?

Ah, here it is! Oops, there's only one check left. My extra checks are in the other room.

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Manuscripts: Contributions for possible publication are most welcome. We'll do the best we can to return anything you request, but we assume no responsibility for loss or damage. Payment for submitted articles will be made after publication. Please submit both a disk and a hard copy of your article [IBM (ok) or Mac (preferred) formats], carefully checked drawings and schematics, and the clearest, best focused and lighted photos you can manage. "How to write for 73" guidelines are available on request. US citizens, please include your Social Security number with submitted manuscripts so we can submit it to you know who.

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