

Amateur Radio Club WB6WPO

cross talk

A MONTHLY NEWS BULLETIN OF TRW AMATEUR RADIO CLUB

Sponsored by Systems Employee Association

July 1973

Vol. VII, No. 7

TRW/ARC Net Saturdays
7.280 MHz, 1000 PDT



CLUB MANAGEMENT AND STAFF

OFFICE	NAME	CALL	LOCATION	PHONE
PRESIDENT	PAUL WEISZ	K6YQ	R2-2209	62414
VICE-PRESIDENT	TED CARTER	WA6PAS	E1-4037	62006
SECRETARY	FRANK HALLIGAN	WB6GBC	E1-3013	51090
TREASURER	JERRY DEAN	WA6GVO	R3-1072	61612
ACTIVITY MANAGER	ROGER TRAPP	K6SSN	M5-2009	51610
TRUSTEE	CARL ROTHROCK	W6MYC	S -389	50345
CROSS-TALK EDITOR	ED THORNLEY	WA6JHD	R6-2188	51507
EMERGENCY COORDINATOR	DOUG FREEMAN	W6NHX	M4-2243	53126
FIELD DAY CHAIRMAN	DOUG HEYDON	WB6WDS	65-1346	52061
DEPUTY FD CHAIRMAN	BILL DEWS	K6AWO	M2-1141	64571
MEMBERSHIP CHAIRMAN	SUE KENNEDY	WN6TXV	R3-1028	51870
PUBLICITY CHAIRMAN	JOEL WINEMAN	WA6WRB	M4-2315	52275
QSL MANAGER	JACK KOHO	WN6QKM	S -1471	53285
RACES MANAGER	DOUG FREEMAN	W6NHX	M4-2243	53126
SEA COUNCIL REP	STEVE SHANE	WA6NRQ	M1-1545	63090
TRAINING MANAGER	AL LEE	W6KQI	R5-1171	61673

JULY MEETING
ESE DIGITAL KIT DEMONSTRATION
by BOB MAYERS, ESE COMPANY
and
2-METER REPEATER FOR PALOS VERDES
by BILL OGG, L.A. ELECTRONIX
25 JULY 1973 R2-1055 1200-1300

THE PREZ SEZ

By PAUL WEISZ, K6YQ

The past few weeks have been largely devoted to recovering from Field Day, and to some planning for near - term activities.

Field Day 1973 was a success. More people showed up, came early and stayed late than in previous years. The new site at the Navy Fuel Depot in San Pedro was an improvement over Chadwick in several important respects. There were few major problems and a couple of high spots (our two OSCAR-6 contacts, that cool balloon-supported semi-vertical, and two 75-contact hours). Raw score data indicates that we did not disgrace ourselves in

Class 5A. A good time was had by all - our thanks and appreciation to Doug Heydon, Bill Dews, the hard working team captains and all those who participated.

The next major club event will be an evening general meeting at the end of August. Planning is underway now, and prospects look good for a very pleasant evening.

73 Paul

NEW COURSES UNDERWAY

By Al Lee, W6KQI

The first week of July marked the start of the fifth Novice Course and the first Extra Class course. It has been a problem getting instructors for the Novice class because most of the old timers are here two nights a week for the Extra class. Neal Hudson, WA6VCZ, and Greg Loegering, WA6SMS, have agreed to instruct Novice CW on Tuesday evenings. Wade Walstrom, WA6TXE, an Air Force Lieutenant, will take care of the Novice theory, instructing on Thursday evenings.

On Mondays, for the Extra class, Nelson Hayes, W6VBB, is the theory instructor and I take care of the CW instructions. It's a long way to 22 WPM but we'll make it.

There's still room in each class for more students so join us if you want to upgrade your license or if you know someone who wants to get started by taking the Novice course.

The General Class course taught by Paul Weisz, K6YQ, Greg Loegering, WA6SMS, and Cecil Jordan, WB6KHF, has recently concluded so we are looking forward to at least 6 or 7 new Generals as a result. I want to thank these fine members for all of their time and efforts to make the course a success. As the students upgrade their licenses to General or Advanced class, the rewarding feeling is then realized by both students and instructors so thanks again for a job well done.

G3IWL VISITING LONG BEACH

By Al Lee, W6KQI

The Associated Radio Amateurs of Long Beach will have a distinguished visitor at their August 3rd meeting and have extended an invitation for all of us to meet him.

I met Mr. C. E. Godsmark, G3IWL on board the Queen Mary in Southampton in 1967. As chief of the Communications Division of the British Post Office (equivalent to our FCC), Mr. Godsmark issued the special events license, GB5QM to me following an inspection by his team of inspectors. It was a pleasure to meet then, and I'm looking forward to talking with him again.

Everyone is invited to the next meeting that will be held Friday, August 3rd at the old Nike site at the Long Beach airport starting at 2000. The entrance to the site is by driving eastbound on Willow near Lakewood Blvd.

TREASURER'S REPORT

By Jerry Dean, WA6GV0

Balance on hand May 31, 1973.....\$ 633.36

Receipts

Dues (new)	2.00
Dues (renewal)	6.00
QSL Orders	16.50
Raffle tickets	17.25
	<u>\$ 41.75</u>

Expenses

QSL printing	16.75
Postage	8.00
Door prizes	7.00
Course Books	27.86
Field Day Expenses	167.29
	<u>\$ 226.90</u>

Balance on hand June 30, 1973.....\$ 448.21

ACTING SECRETARY'S REPORT

By AL LEE, W6KQI

The regular monthly meeting of the TRW/ARC Executive Committee was called to order at 12:10 PM, July 10, 1973 by President Paul Weisz. Present were: Weisz, Rothrock, Kennedy, Dean, Wineman, Lee, Dews, Freeman Trapp and Carter.

Old Business:

1. Field Day: A recap of the activities in conjunction with Field Day operations was made. Total expenses were reported by Treasurer Dean. Joel Wineman was commended for the excellent publicity coverage.
2. Club QSL's: QSL cards with WB6WPO call letters were received and approximately 150 cards have been sent out by Roger Trapp.
3. RACES: On Wednesday, June 27, the RACES training meeting took place in the E2 Presentation Room attended by all the TRW/ARC members plus about 40 other RACES members from the South Bay and other districts. Members are urged to check in on Monday nights. Emergency Coordinator Doug Freeman has plans underway for TRW members to participate.
4. After-Hours Club Meeting: Much discussion took place regarding after-hours club meetings. The response from the Cross-Talk article was small but very affirmative. Therefore, the August meeting will be held on Wednesday, the 29th at Lococo's in Manhattan Beach. Watch for further announcements.
5. OSCAR-AMSAT: The first OSCAR 7 tests should take place in September reported Roger Trapp. He is organizing the club station in order to participate in the tests.

New Business

1. Work Party: A work party is to be organized by Al Lee to further tear down the Field Day antennas and place them inside the storage area at Building 65.
2. Correspondance: A letter was received from Ollie Saunders, W6ORC, urging the club to donate the solar panels that were surplus from the OSCAR III, to a worthwhile project at the University of California at Berkeley. After discussing the request, President Weisz concluded that the situation would have to be further investigated to determine if we have any further plans for the panels and if we would be allowed to donate them. A loan of the panels was considered.
3. RTTY: Joel Wineman reported that he had contacted a local equipment manufacturer regarding the purchase of new equipment that can be used with the teletype now located in the club shack.
4. Logo Contest: Joel Wineman was authorized to award prizes to those who participate in the club logo contest.

WANT AD DEPARTMENT

For Sale: Drake TR3 - \$ 300, Swan Mk I Linear - \$ 250. Cal Cecil Hinson, WA6OKN at Interstate Marketing - 883-7606.

Wanted: Any FT243 type crystals, especially frequencies outside the ham bands. To be used for filters for Field Day 1974. Ship to Fred Reed, W6UMC via Ed Thornley, R6-2188.

MUTT AND JEFF ANTENNA

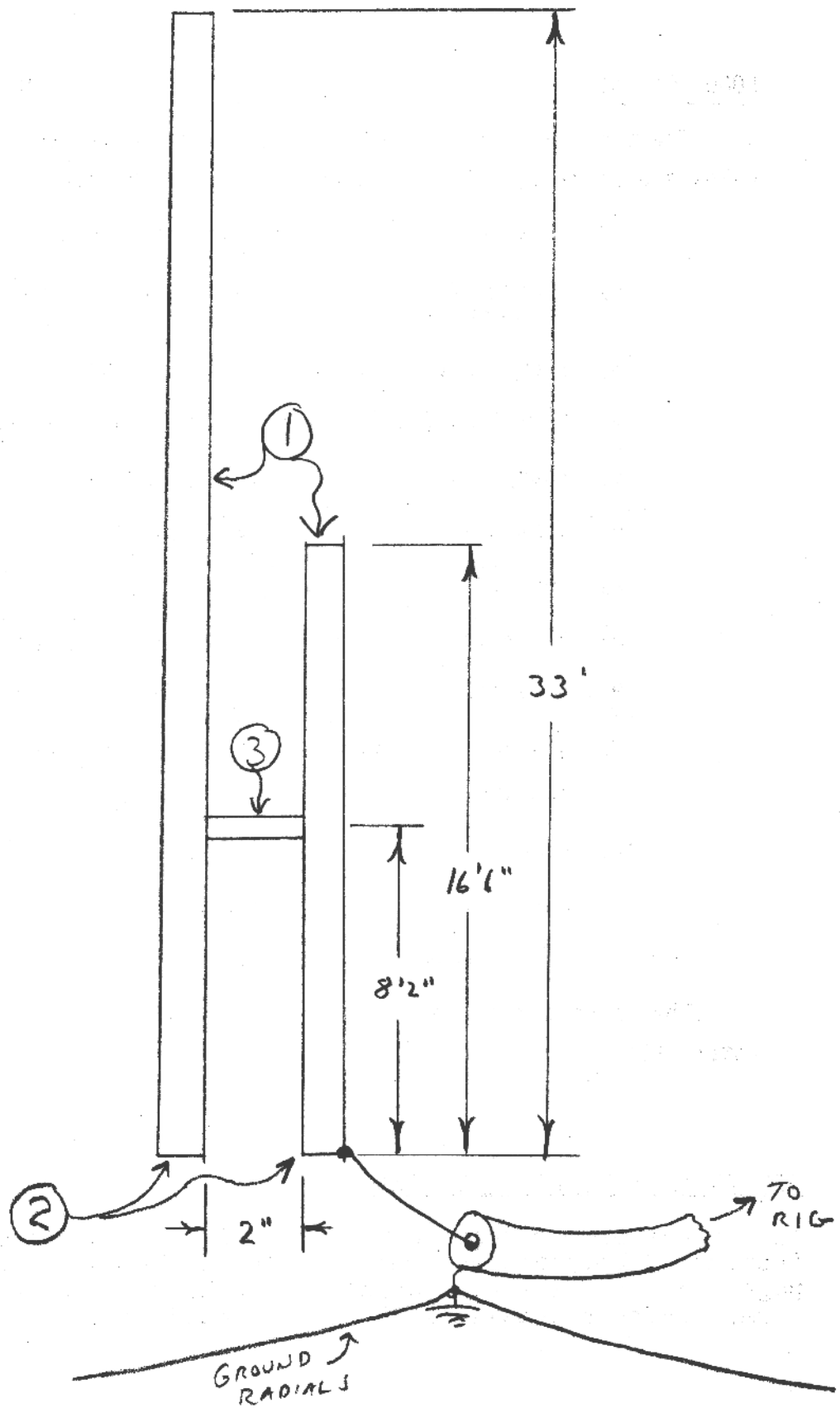
By Fred Reed, W6UMC

An easily-built, low cost vertical antenna, commonly known as the Mutt and Jeff, is shown in this issue for you home-brew types that want to try something a little different.

This antenna will work well on all bands, 80 through 10 meters. I presently am using one at the home QTH and have had many good QSO's with it.

The notes below refer to the sketch on the next page and provide all the needed details to fabricate this little gem.

1. The vertical elements are made from aluminum tubing, any diameter of 1 to 2 inches or more. The larger the diameter, the better.
2. The bottom of the tubing is ground mounted, but insulated from ground. Soda-pop bottles make good insulators.
3. The strap connecting the two pieces of tubing can be aluminum strip 1/4 inch wide, or regular plumber's strap available from any hardware store. The easy way is to use self-tapping screws for securing the strap to the tubing. I recommend that you use at least two on each tube. The ground radials are extremely important and should be of the total length for the center of each band you want to operate the antenna on.



LOGO CONTEST

By: Joel Wineman, WA6WRB

The time has come — the Logo Contest you have been waiting for is here! The rules are simple, the prizes extravagant and the honors great!

- 1) Draw, paint or pasteup your Logo design
- 2) Design should include notation of TRW/ARC, W6TRW or both
- 3) Entry must be limited to three colors
- 4) Submit copy only, keep original in safe place
- 5) Entry must be on 8-1/2 x 11 paper
- 6) Submit as many entries as you wish
- 7) Non-club-members may enter
- 8) All entries must be received by 31 August 1973
- 9) Send entries to Joel Wineman, M4/2315
- 10) Winners announced in September Crosstalk
- 11) TRW/ARC Board members will judge entries
- 12) First prize — \$25.00 Gift Certificate to L.A. Electronics
Runner-up prize — \$10.00 Gift Certificate to L.A. Electronics
All serious entrants receive — TRW/ARC Mug (or equivalent)

The entries have already started to come in; don't miss out; enter once; enter often.

DINNER MEETING LOCATION CHANGE

The August Dinner meeting will be held at the Fortune Room in Gardena instead of Lococo's as announced in the Executive Committee minutes on page 3 of this issue. Social hour will commence at 5 PM and dinner at 6 PM. Further details will be announced in the next Cross-Talk.

ACTIVITY OF WB6WPO

BY: ROGER TRAPP, K6SSN

Activity of WB6WPO has continued to be good. Most of the activity, though has continued to be by a limited number of operators. The following is a summary of activity for the past month.

15 June - 12 JulyDX Worked

<u>Country</u>	<u>Band</u>	<u>States Worked</u>	<u>Band</u>
Kure I.	20,40,75	Kansas	40
Phillipines	20	Missouri	20,40
Grand Turks	20	Delaware	40
Australia	20	Calif.	20,40
Virgin Isl.	40	Nebraska	20
Mauritania	20	New Jersey	20
Am. Samoa	20	Texas	20
Hungary	20	Utah	20
Denmark	20	S. Carolina	20
Niger	20	Oklahoma	20
Morocco	20	New Mexico	20
Norway	20	Indiana	20
Japan	20	Ohio	20
E. Car. I.	20	New York	20
Canary I.	20	Alabama	20
Italy	20	Maryland	20
Cook I.	20,40	Louisiana	20,75
Angola	20	Arkansas	20
Nauru	20	Georgia	20
New Caledonia	20	Massachusetts	20
Sao Thome	20	Illinois	20
Aland Isl.	20	Maine	20
Tongareva Atol	20	Vermont	20
(Manihiki Isl.)		Alaska	20
Lithuania	20		
Ukraine	20		
Martinique	20		

OPERATORS DURING PERIOD

WB6GBC
WA6PAS
WB6TCR
K6SSN

The following is a status report for WAS, DXCC and 5BWAS

			5BWAS				
	DXCC Countries	WAS States	10	15	20	40	75
Worked	107	50	20	19	38	27	33
Confirmed	57	42 ⁽¹⁾	16	13	14	4	18

Note: (1) All missing have been re-worked including Vermont.

SOME NOTES ON THE COMMERCIAL EXAMINATIONS

Lloyd Williams, WA5PPA

Note: The following is reprinted from the Collector and Emitter published by the Aeronautical Center Amateur Radio Club, Oklahoma City, Oklahoma.

One of the delightful things about modern electronics is the richness of the field. Opportunities exist wherein one can pursue a dozen or more lines of investigation and never come close to exhausting most of them -- net operation, construction, MARS, ARPSC, theory, club participation, higher grade licenses, etc.

Changing, growing interests often characterize us. Some years ago my interest was principally in DX -- or so I thought. But the challenge of FCC examinations has proved both captivating and rewarding. Now with only one written FCC test left to take -- Element 7, Aircraft Radiotelegraph, I thought some shared ideas on this theme might be of interest to some of you.

The following are the classes of licenses open and the elements that must be passed to acquire them:

(1) Radiotelephone Third Permit, Elements 1, 2 and 9. Element 1 is basic law; Element 2 is basic operating practice; Element 9 deals with broadcast operation. These elements contain little in the way of technical electronics, but they do touch upon questions of frequency, operating power, and GMT. Each element contains 20 questions, a total of sixty for the permit. Only five errors per element are permitted for successful completion.

(2) Radiotelephone Second Class License, Elements 1, 2, and 3. Once an element is passed it does not have to be repeated so the holder of a Third Permit needs to take only Element 3. And three is the demon! In my judgment this is one of the two most difficult of the FCC tests and it deals almost exclusively with electronics: direct current; alternating current; inductance; capacitance; tubes; amplifiers, both a-f and r-f; power (essential to mastering this element is a flexible grasp of all the variations of the power formulas and facility in applying them to problems that contain several items unrelated to the actual problem -- a typical type of FCC question); oscillators -- all major types; coupling; power supplies; transistors, types and biasing; feedback circuits; tone control circuits; neutralization; AM transmitters; SSB transmitters; FM transmitters; AM and FM modulation; AM and FM sidebands; AVC; pre-emphasis and de-emphasis; deviation ratio and modulation index; crystals; harmonics; doubling; meters; test instruments; limiters; discriminators; transformers; vectors, mixers;

antennas -- Hertz, Marconi, and loop; field strength; propagation; batteries; motors and generators; microwave tubes and conductors; troubleshooting -- which for this test means essentially what happens to various meters when circuits either open or short; and resonant frequency. In sum, this examination is about ninety percent technical. It contains 100 multiple choice questions with a considerable number of them dealing with circuit analysis. A passing score is 75 percent or better -- as is always the case on FCC written tests.

(3) Radiotelephone First Class License, Elements 1, 2, 3, and 4. This, also, is largely a technical element building logically upon Element 3. Emphasis is upon a-c phase relationships; microwave generators; wave shaping; Alpha and Beta gain; microphones; calculating db; VU meter circuits; modulation monitors; line equalizer circuits; crystal heater circuits; carrier shift; relays; filters; broadcast antennas; AM directional arrays; TV tubes and transmitters; AM, FM, and TV propagation; polarization, scanning, delta and wye connections; and a very few questions on standard AM broadcasting rules and regulations.

Fifty items are included with the emphasis upon TV more than any other single topic.

(4) Ship Radar Endorsement, Element 8. Certification of successful completion of this element is simply typed on the bottom of a 2nd or 3rd Class Radiotelephone License -- either of which must precede it; no separate license as such is issued.

The best preparation for this test is mastery of Elements 3 and 4, followed by emphasis upon: FCC rules and regulations governing radar; frequencies of operation; radar transmitters and receivers; waveguides; radar modulation; timer and indicator circuits; blocking oscillators; multivibrators; klystrons; magnetrons; shaping circuits; TR and ATR tubes; STC -- sensitivity time control circuits; echo box (dummy load); and servo-mechanism controlling antenna rotation; "A" and "B" scan and PPI. There are also a few questions on Loran and direction finding as well as some on the structure and function of the CRT.

Fifty questions, about forty or more technical in nature, comprise the test. Several diagrams must be identified and corrections, if necessary, indicated.

(5) Radiotelegraph Third Permit, Elements 1, 2, and 5. All of this material is substantially concerned with rules, regulations, and operating law. Elements 1 and 2 must be taken for this permit if the applicant does not hold a radiotelephone permit 3rd class or better. The distinguishing feature of Element 5 is CW procedure, so that any experienced amateur can master it very quickly. "Q" signals and message handling receive considerable attention, although a few technical questions dealing with the adjustment of automatic keys, types of emission, and filtering are included.

This permit requires a code test -- given prior to the written test of 16 wpm over code groups and 20 wpm plain text. Psychologically it is better to ask for the faster code first. But be advised: the FCC takes a much tougher line in evaluating this code test than it does on any amateur test. On occasion you may be given the benefit of the doubt on an amateur test, but for obvious reasons you will be graded down for illegible or doubtful characters on this test.

Since the written test comprises fifty items only 12 questions can be missed if you hope to pass.

(6) Radiotelegraph Second Class License, Elements 1, 2, 5, and 6. No code test is required for this license, but it is a thoroughly comprehensive test; it is to telegraph what Element 3 is to phone, with about ninety percent or more of the questions technical in nature.

Test items are built around: shipboard radio equipment -- transmitters, receivers, antennas, direction finders, Loran, emergency equipment, auto-alarms -- both receivers and keyers; emission tolerances; radar; and bauds (the number of code elements per second).

The best preparation for this test is mastery of Elements 3, 4, and 8, although there are no questions of TV (as emphasized in Element 4) CRT's do come in for consideration.

Most FCC tests emphasize transmitters, radiation, and antennas in one form or another and they are important here, but surprisingly there are as many questions on receivers, if not more, than on any other single topic. Bear down on detectors, TRF's, mixers, and regenerative receivers.

One real surprise on this examination was the requirement of handdrawn diagrams. I had assumed from conversations with oldtimers (such as W5UZX -- although the false conclusion is mine, not his) that the day of the required freehand diagram is over. It is not. Some versions of this test require twelve to fifteen drawings -- power supplies with filters and polarities; amplifiers; coupling; mixers; block diagrams of both receivers and transmitters; and elementary test equipment circuits. This is a real challenge and will jolt any applicant who does not expect it.

Again, 75 or more correct answers out of a possible 100 are necessary.

(7) Radiotelegraph First Class License. There are no technical test elements as such for this one. Two basic requirements are: (1) a code test of 20 wpm code groups, and 25 wpm plain test; and (2) one year of cumulative experience as a shipboard or coastal station operator.

(8) Aircraft Radiotelegraph Endorsement, Element 7. Contrary to rumor, the FCC is not presently planning to cancel this permit, although the number of applicants is very small; e.g., about three or so in Dallas last year.

Brace yourself for another 100 question test. Prior to taking it successful code equivalent to First telegraph must be passed, and 75 percent of the written questions must be correct to receive credit for the test.

In addition to rules and regulations, the technical material is built around frequency identification -- e.g., VHF emergency frequency, etc.; direction finding; aircraft shielding; generators; omnirange; aircraft marker beacons; VOR; aircraft antennas; MOR; Z markers; ILS; radio altimeters; Flux Gate compass; power supplies; Loran; RACON beacons; radio navigation and chart reading; and such problems as calculating true heading when deviations and compass headings are known.

The FCC has a few age limitations on these licenses: (1) First Class Radiotelegraph is issued only to applicants 21 years of age or older; (2) Aircraft Radiotelegraph Endorsement is issued only to applicants 18 years of age or over; and (3) a person must be 14 or over for a Radiotelephone Operator Permit.

I commend the regimen of study for these licenses, for the challenge and sense of success in taking and passing FCC commercial tests has greatly enhanced my feeling of competence as an amateur. Also, this is a good way to keep reading and mastering the fundamentals.

If these remarks are helpful, and if the editor wishes, I shall be pleased to comment in a future issue of the C and E on the text and study material available for these tests. Needless to add, my discussion will not have the technical finesse of a W5JJ or a WA5TRS, but is based upon several years of search and experience. And it might save some of you a great deal of time.

In conclusion, a friendly word about the FCC. I cannot speak about other offices, but the team in Dallas is first-rate both personally and technically. Having passed three code tests and nine written tests with this office I feel reasonably well acquainted with them. They are consistently business-like and professional, always keeping to the regulations, but also maintaining an amiable, human touch in the process. They do not give away anything unearned, and when an applicant is denied a license -- as, for example, when I ran afoul Element 3 one time -- they do so with courtesy. We are fortunate to have the integrity of commercial and amateur radio protected by such a fine staff.