

Lieut. Collison explaining the operation of a regulation transmitter to students.

# ★ NAVY RADIO OPS ★ IN THE MAKING

by LEWIS WINNER

*The eyes and ears of our battle fleet are responsible for new techniques. Here's where radio ops are trained.*

**W**HEN freight handlers, glass-blowers, soda dispensers, paper samplers, bartenders, hotel bell captains, and laborers, with absolutely no knowledge of radio, can within a period of sixteen weeks, be converted into expert radiomen, ready for active wartime duty, that's something to talk about. And that is exactly what is being done at the *U. S. Naval Training School*, Noroton Heights, Connecticut. Men from all walks of life, many of whom had not received too advanced an education,

are brought to Noroton, after they have enlisted and passed an aptitude test and put through a stiff four-month course in code, touch typing, navy procedure, and radio practice and theory. All do not pass the course, it is true, but the vast majority do and with flying colors.

The school was commissioned on October 28, 1941 and is under the command of *Captain William Baggaley*, a regular United States naval officer who within one month after he had received instructions to establish the

training center, did so and with 500 students as enrollees. It was quite a job, getting the material together, rearranging the offices in the building, which had been an Old Soldiers' Home and vacant for a spell. But all was in order on the day assigned for the opening and expert radiomen were soon graduating in the prescribed time. Many of those in the first class were amateurs, a fact that did ease the pressure of instruction, but the supply of amateurs did not last long, and today, ham enrollees are a rarity.

There are three types of radio classes at Noroton. One is the communications school for enlisted men, which is the major class, as far as size and time for instruction are involved. The others are the officers' training school and the naval communications pool, more familiarly known as the compool. Incidentally, there is another class at Noroton . . . a class devoted to cooking . . . an unusual project, although it has nothing to do with communications.

In the enlisted men's course, our friend "code," receives quite a featured position, for the ability to receive and transmit dots and dashes is certainly a vital requirement on land and sea. There are quite a few code and typing rooms, each devoted to a specific type of instruction, not only for speeds, but for styles of messages, and classifications of coded phrases as well as methods of interpretations.

The method of instruction is based on years of training for speed copying and transmission and as such is unusually effective. To testify to this, we were shown the records of students . . . students who had never touched a key or for that matter a typewriter either, and in copying, the ability to use a typewriter is as important as coping with the messages. In most instances, the students were able to copy at a rate of about four to eight words at the end of the fourth week. But at the end of the eighth week, the speeds jumped up to seventeen in 90% of the cases and at the end of the twelfth week, the speeds were up to twenty-nine and thirty words.

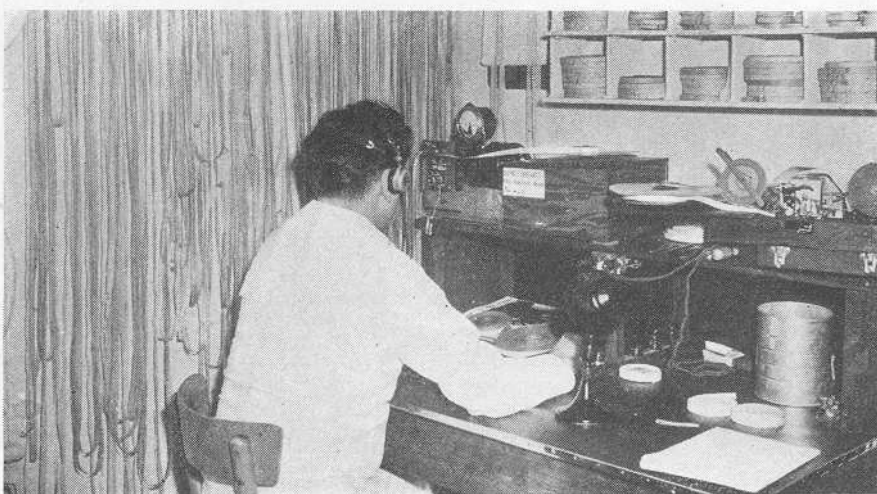
The phonetic method of instruction (entirely by sound) is used at Noroton. This speeds up the mental processes of learning and facilitates recognition of characters. If the sound system is not used, say the Noroton experts, students go through the double deciphering process, first to hear the signal and then to determine its "dot-dash" make-up. Learning by sound eliminates the second step, for the student can recognize the signal instantly as the character it represents. The real ability to copy code at high speeds, say the CRM instructors at Noroton, is the development of the knack of copying behind. This is in contrast with copying ahead, where you anticipate what is coming, a practice that is considered faulty and dangerous.

At least two characters should be carried mentally, before the characters are placed on paper. Points of instruction on this phase, simple as it may seem, are responsible for speed agility, in addition to the four basics . . . concentration, practice, confidence and patience . . . basics without which no method of instruction can be complete.

Every student is given a booklet with the foregoing information, in addition to pages of lessons, prepared in a simple yet instructive manner by Louis F. St. Amand, CRM USN (Ret.), who is an instructor at the school.

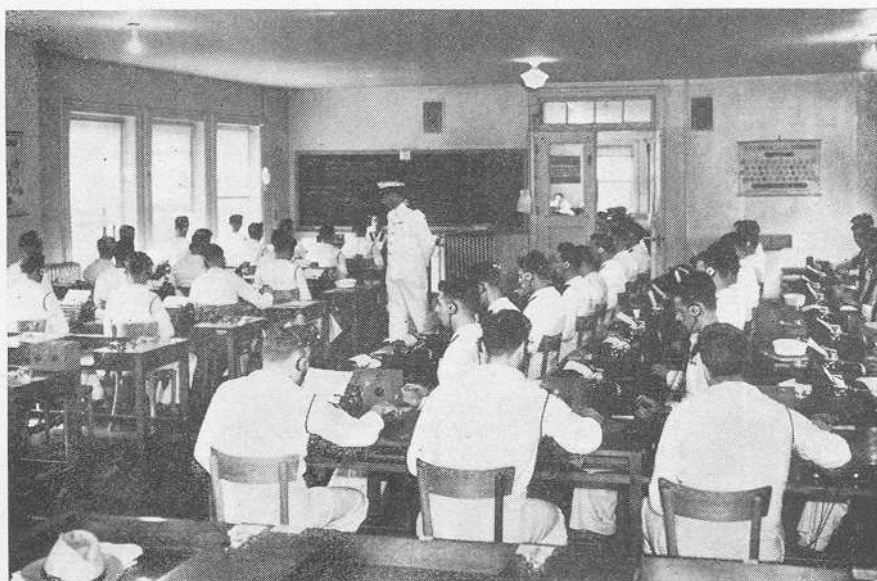


Part of the "business end" of the code source. Note the various receivers.

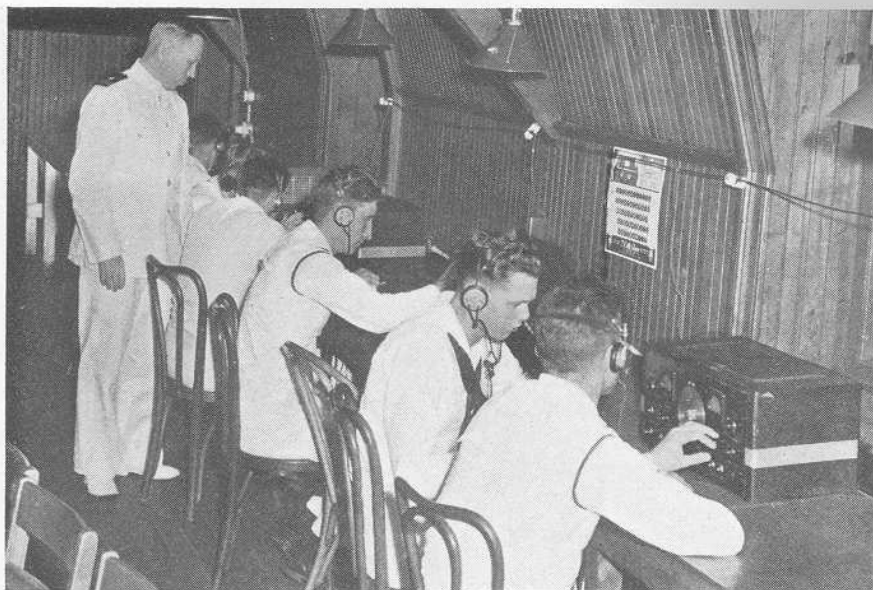


Here is where code tapes are punched. Tapes on wall are used in weekly sequence.

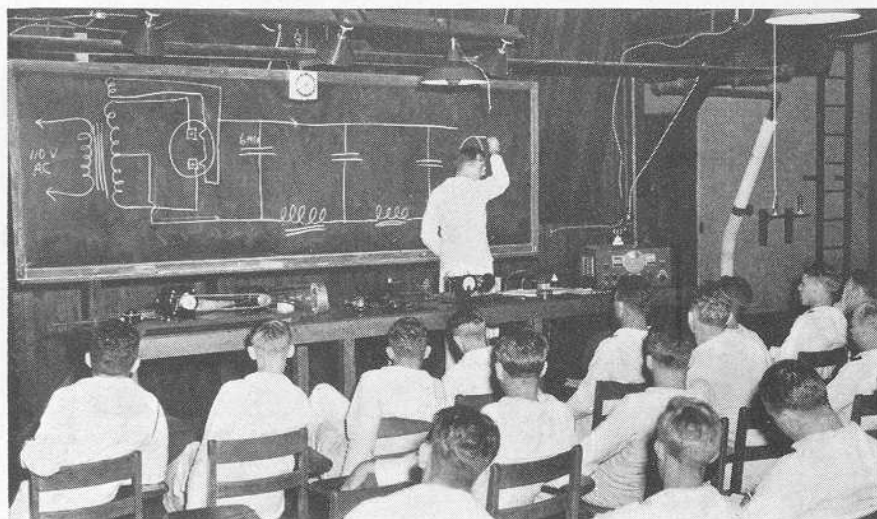
Instructing students in tactical procedure. Atmosphere is like the "real thing."





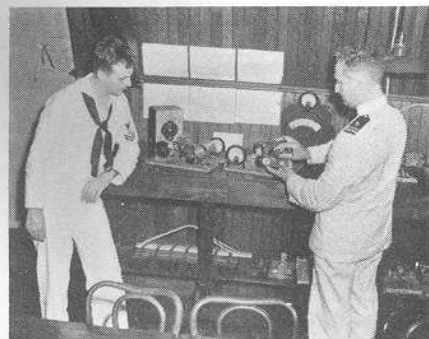
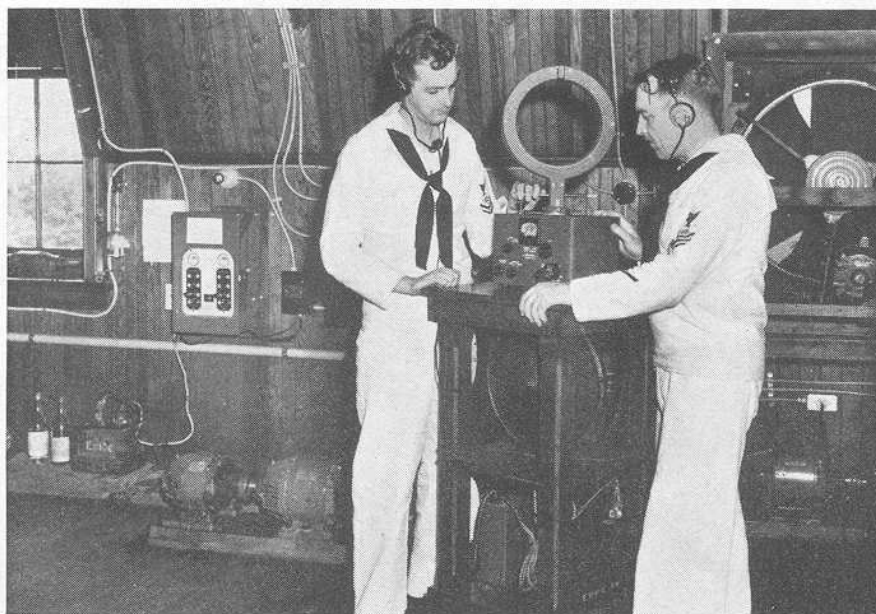


Students becoming familiar with operation of transmitters and receivers.



A class in theory is engaged in the study of conventional power supplies.

At the controls of a loop receiver in the material room at the navy school.



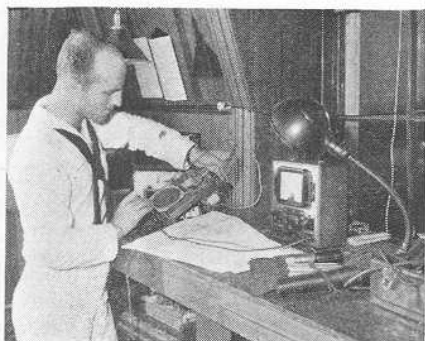
Sectional functions of part of a transmitter are being analyzed.

One of the most interesting guides to code success that the students at Noroton are given, is in the form of a graph . . . a graph that illustrates what final speed of code will be achieved by anyone, as predicated on the speeds attained during any week. For instance, if at the end of the eleventh week, the speed of a student is nineteen words, then at the end of the sixteenth week, it should be twenty-eight. While this guide is not indicated as being infallible, it serves as an effective chart, and particularly as an effective stimulant for progress. It is also an example of the pains and care to which the instruction personnel contribute to produce the expert code men, for which Noroton is so famous.

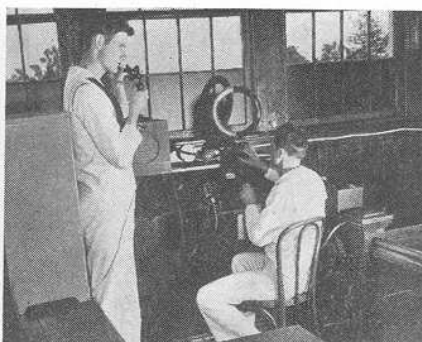
The radio materiel course constitutes another important phase of radio training at Noroton. This course is intended to develop "Radiomen Third Class Strikers," in, of course, conjunction with the code and other affiliated courses. The courses are divided into sixteen weeks, and cover nature of electricity (first week); ohm's law (second week); electric batteries and cells (third week); magnetism (fourth week); electromagnetism (fifth week); electrical generators (sixth week); motors (seventh week); electrical measuring equipment (eighth week); transformers and condensers (ninth week); vacuum tubes (tenth week); radio receivers (eleventh week); radio direction finders (twelfth week); transmitters (thirteenth week), and laboratory practice (fourteenth week). Two weeks are allowed for late starting groups, and duties which may keep the students from class. Thus, actually, the course covers a concentrated period of fourteen weeks.

During this period, blackboard instruction, book instruction and actual materiel applications are provided. The materiel being in the same room as the blackboard instruction is given, it is a simple matter to intersperse discussion with actual materiel applications and illustrations. Thus students become completely familiar with the various projects in their course of study in a practical as well as theoretical way.

Books recommended are those found to offer the greatest practical and



Continuity-testing of radio equipment is an important part of the training.



Using a direction finder in the airplane detection station at Noroton.



Student officers examine a blinker tube. It sends Morse by flashing light.

theoretical value. Among those suggested to the students are Practical Electricity by Terrel Croft; Industrial Electricity by Dawes; Practical Radio Communication by Nilson and Hornung; Understanding Radio by Watson, Welch and Eby; Fundamentals of Radio by Everitt, Jordan, Nelson, Osterbrook, Pumphrey and Smeby; Elementary Physics by Milliken, Gole and Coyle.

The materiel used is of the latest design, from the smallest object to the largest. Students are not only given an opportunity to operate the various apparatus, but build them, too, for receiving and transmitting. Many of the units in the materiel room, used as

instruction, where students are given actual instances of application, just as if they were afloat. For instance, they receive radio watchstanding practice, and instruction in direction finding. They are taught how to repair equipment rapidly under emergency conditions.

In the code rooms, actual tactical procedure is set up, with transmitting and receiving posts arranged in fashion identical to positions at sea. Thus the prospective operators become fully acclimated to actual on-the-scene conditions. About the only thing missing from these demonstrations, is the boat itself. The messages fed to the various desks, or posts, are actual navy messages and in many instances, picked up from Navy transmitters. And all the peculiar forms of background noise that may accompany such signals are fed right along with them. Hours of copying and transmitting accurately under these adverse conditions further serve to increase the alertness and proficiency of operators that come from Noroton.

Students at Noroton receive pay in accordance with their rating, while in training. In addition, the Navy pays all traveling expenses, and provides board and lodging, and the initial outfit of uniforms and equipment.

The school day is from 8 A.M. to 4 P.M., with time out for dinner and recreation. Voluntary study periods and evening classes are available for those who require additional instruction, or who wish to improve their status.

In addition to receiving instruction in radio, students are also taught seamanship, Navy regulations, first aid, and other general Naval subjects. Thus the education at Noroton is complete in every respect . . . so complete and thorough, that other Naval communications schools now being organized are adopting the entire curriculum of Noroton. And these schools include the commercial as well as universities, now training radiomen. Among these schools are Harvard (with about 1000 students), Cornell (with around 1000 students), RCA Institutes (with over 800) and the women's college at Smith, which will soon start training women for communications work.

(Continued on page 42)



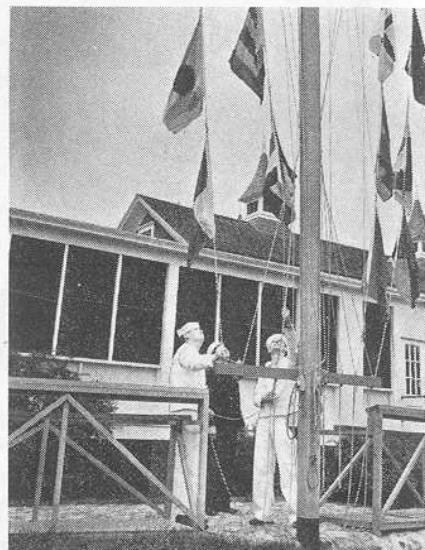
Captain William Baggaley  
Commanding Officer of Noroton

standard objects of instruction, have been built by students.

Maintenance, inspection and repair constitute a very important phase of the materiel course. Typical trouble shooting examples are plotted in instruments. Probably one of the most unusual of these, for the beginner, is a breadboard receiver, with every item numbered. Students are asked to determine values as well as faults, which are deliberately spotted, and changed for each group of students.

In addition to the aural method of transmission courses, visual methods of transmission are also taught. These courses include the use of flags to transmit messages, and the use of blinkers and the blinker gun to send messages too. These form very important sections of the program of training, directly allied to methods of communication.

Probably one of the most interesting and vital sections of the training program, concerns the "on-the-ship"

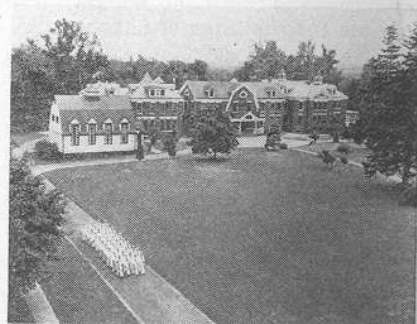


Students raising signal flags on the "Flag hoist" at the Navy school.



Students sending a message by blinker to other students is part of training.

Marching from the code classrooms after strenuous session.





## Navy Radio Ops

(Continued from page 9)

The officers' training school is another unique feature at Noroton . . . unique in that here again no radio background is necessary . . . and yet within 30 days . . . one month . . . the officers become sufficiently familiar with radio to become communications officers. These officers are almost entirely straight from civil life, and are college graduates, having completed accredited courses in anything and everything but radio. Nevertheless, they take a course . . . and it is a

course . . . for it begins at 7:45 in the morning and ends at nine in the evening . . . and takes in everything from code, both aural and video, to touch typing, theory and procedure. Their code course enables them to send and receive at about 8 words per minute, while theory and practical classes familiarize them sufficiently with all types of apparatus and their operation to stand them in good use when they go into service.

As soon as these young officers (the majority are ensigns, some are lieutenants [j.g.] and a sprinkling of lieutenants) complete their course, they are sent out to an active duty radio assignment, an assignment that can probably

be termed a portion of the course, for it is during this assignment that they receive much of the practical experience. According to reports, all of the communications officers that have graduated from this compact training course have done well and have proven themselves worthy graduates of Noroton.

The other division of training at Noroton, devoted to the Compool, is also an interesting example of effective training. Into this class comes a selected group of experienced radio and signal men who are taught flag and other visual signal methods and other activities fitting them for duty on merchantmen and the vessels that escort them in convoy. The course may be termed post-graduate and is given to those who come from other stations as well as Noroton. Here again, the course is a one-month affair, with long hours, plenty of studying and practicing and truly outstanding results as the merit of award. No college degree is required to enter this class, but you do have to know radio and visual signals and know it well.

Noroton is staffed by a group of truly seasoned radio veterans. Heading the staff is Lt. Commander Boyd Phelps, who is the executive officer and also head of the department of instruction. Commander Phelps is known to amateurs throughout the Nation and in many parts of the world, too, more familiarly as W9BP.

Another popular ham who is now at Noroton is Lt. Donald S. C. Comstock . . . W1MY. He is on the staff as communication officer.

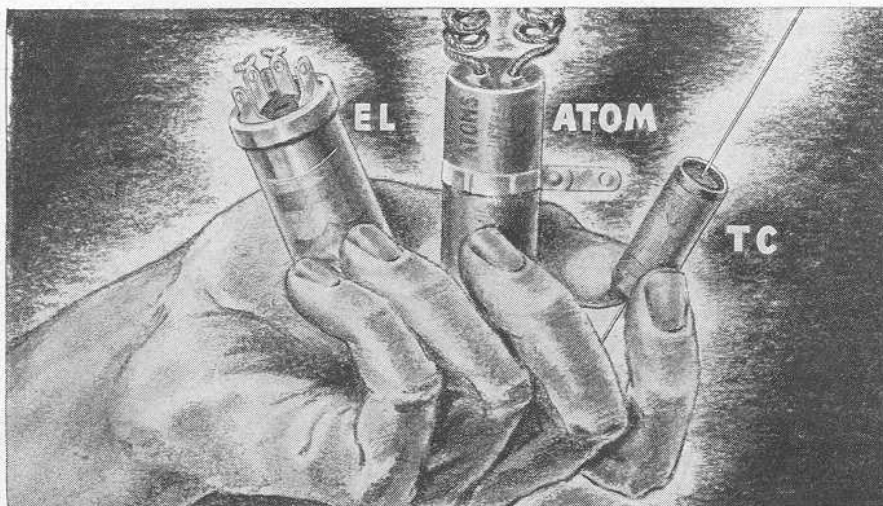
Heading the materiel course of instruction is Lt. Perce B. Collison, who is known to amateurs all over. His call letters are W2IXE.

Lt. (j.g.) Francis Almstead, whose educational work, particularly on course outlines for use in secondary and higher schools is well known, is serving as an instructor at Noroton.

All members of the staff are members of the USNR. Captain Baggailey, the commanding officer of the school, is on the retired list of the Navy, recalled to active duty.

While Noroton is just reaching its second birthday, it has achieved an enviable record and position in training centers. The courses were not custom-made when the classes were about to begin. Instead they had to be created. And they were, with painstaking care and experiment. The result is evident from the record . . . a record of which the Navy says . . . *Well Done.*

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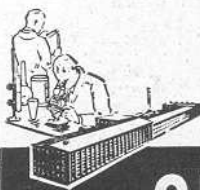


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