

related psychiatry, the action of alcohol as a drug and as an addictive drug, the treatment of alcoholism with the drugs Antabuse and Temposil.

Also recommended are courses in demonstration of changes in body systems associated with chronic alcoholism, neurological signs, liver findings and motivations for psychiatric treatment. Students also should learn something about forensic medicine, about laws on the management of the non-cooperative alcoholic.

Both the AMA and the American Hospital Association have recommended admittance of alcoholism patients to general hospitals. Since only a minority of such patients are uncooperative, these hospitals have been urged to "base the decision as to admission or non-admission" upon the condition of the individual patient.

The individual differences in alcoholic patients was pointed out by Dr. Carl G. Jung, the psychiatrist who died recently at the age of 85.

Dr. Jung told a businessman alcoholic patient that he might be one of those rare cases who made a recovery even though he had become intoxicated after leaving the psychiatrist's care, and returned in acute depression.

Once in a while, said Dr. Jung, alcoholics have had vital experiences in the nature of huge emotional displacements. Ideas, emotions and attitudes that were once the guiding forces of these men are suddenly cast to one side, and a completely new set of conceptions and motives begin to dominate them.

His businessman patient had such an experience and lost his obsession to drink. He was partly instrumental in starting Alcoholics Anonymous. There are 12 steps suggested to alcoholics by A. A. Boiled down, they mean first, admission of alcoholism; second, personality analysis and catharsis; third, adjustment of personal relations; fourth, dependence on a higher power; and fifth, working with other alcoholics.

Al-Anon and Alateen, an outgrowth of Al-Anon, which is closely allied with Alcoholics Anonymous, include family groups and teen-agers, respectively. Information about both these programs can be obtained from P. O. Box 182, Madison Square Station, New York 10.

The National Council on Alcoholism, 2 East 103 St., New York 29, is the national voluntary health agency for control of alcoholism.

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portable field missile system that can be operated by two or three men.

The programmer-timer operates according to the advance instructions given to it before the missile is launched. The built-in logic system tells the power-handling equipment "when to go and when not to go".

Production costs, based on limited output of a few units each month, are estimated at \$750 to \$1,100 per unit.

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Transmitter for Space

► DEVELOPMENTS of the first solid-state microwave transmitter for space communications was reported by General Telephone and Electronics Corporation, New York, at the National Convention on Military Electronics in Washington, D. C.

The compact new unit, smaller than a cigarette carton, occupies about one-seventh the space required for conventional transmitters, and reportedly has 11 times the life expectancy and 10 times the frequency stability.

The transmitter could be linked with a solid-state radio receiver to form a complete space communications system. It is adaptable to space probes or communications relay satellites.

The engineering model, shown at the meeting, weighs about three and one-half pounds. It has an operating life expectancy of more than two and one-half years.

It operates with two watts of output power within the S-Band—1,700 to 2,300 megacycles. This is believed to be the minimum power and frequency requirement for transmitting information between two points on the earth by way of a relay satellite in a stationary equatorial orbit.

The transmitter was developed for the Air Force by Sylvania Electric Products, Amherst, N. Y., under a \$95,000 study contract. Supplemental awards total about \$1,000,000. Sylvania is a subsidiary of General Telephone and Electronics Corporation.

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OCEANOGRAPHY

Oceanographic Research

► AN EXPANDED oceanographic research program is vitally necessary for the national defense.

Although increased knowledge of the oceans is seen by many as a solution of any future United States food and water problems, the U. S. Navy pointed to the need for protecting U. S. shores from a nuclear submarine attack.

Reports about the Russian build-up of a fleet of nuclear submarines and the reportedly porous U.S. submarine defense system has forced the Navy to make an all-out effort to plug up these gaps.

A 10-year, \$1 billion naval underwater research program (TENOC 1961-1970) has been set up to learn more about the environment in which U.S. defense systems will be operating. Scientists must learn more about such important variables as

currents, salinity and noise levels before they can make detection equipment more accurate and reliable.

A new anti-submarine experimental program under the code name Artemis "has evolved from the Navy's basic and applied oceanographic research program," Rear Adm. L. D. Coates, chief of the Office of Naval Research, told a House subcommittee hearing on oceanography in Washington, D.C. The hearing was on a House bill to expand and coordinate oceanographic research.

Adm. Coates also gave credit to oceanographers at private institutions who through their research not only push back the frontiers of oceanography but also increase the effectiveness of naval operations.

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ROCKETS AND MISSILES

Missile Clock Computer

► AN ELECTRONIC clock computer for missile systems, first of its kind to be readied for actual use, had its first public showing at the three-day National Convention on Military Electronics in Washington, D. C.

The tiny, microminiaturized device is small enough to fit into a soup can. It weighs only 14 ounces, compared to the 15 pounds of the mechanical unit now used in the Bomarc missile.

Representatives of Cleveland (Ohio)

Metal Specialties Company, where the system was packaged, and the U. S. Army's Diamond Ordnance Fuze Laboratories, Washington, D. C., where it was designed, said the ultra-compact unit is "10 to 100 times more accurate" than standard mechanical systems now used in ballistic missiles.

The research prototype has been successfully test flown in five different Army missiles. For actual use, the Army will concentrate first on its application to a small,

ANIMAL HUSBANDRY

Breeding Not Feeding Makes Steak Tender

► IT IS BREEDING, not feeding, that makes a tender steak, scientists at the Florida Agricultural Experiment Stations, Gainesville, Fla., have discovered. Popular opinion, backed by Federal meat grading standards, holds that the most tender cuts of beef are the more expensive, well-marbled ones.

But Drs. A. Z. Palmer and J. W. Carpenter of the Gainesville staff, and Dr. W. G. Kirk of the Range Cattle Experiment Station in Ona, have found that marbling actually has very little to do with tenderness, although a certain amount is desirable for juiciness.

Breeding is the biggest factor in tenderness, the scientists said. Some bulls sire calves that have tender meat, while others sire only tough-meat calves.

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