

## PHYSIOLOGY-PSYCHOLOGY

# New Test of Fatigue

A special tuning fork, held vibrating against the finger tips, may prove to be useful in determining when flyers need rest.

➤ A NEW instrument which may become a simple means of determining when a pilot is reaching a dangerous level of fatigue and needs to be grounded temporarily has been developed by Major Aaron Roth, M.C., U.S. Army.

The new instrument, called a neurometer, is a specially designed tuning fork. It is described in a report in *War Medicine* (September), military medical journal published by the American Medical Association and the National Research Council.

The tuning fork has a frequency of 128 cycles, an intensity of 70 decibels and a perception time of 35 seconds at the fingers for normal. There is a cross bar in the stem.

In using the neurometer, the examiner strikes the mid-third of the fork against the side of his own hand with enough swing and force to make the weighted ends click together. He then notes the time and transfers the vibrating fork to the patient's upturned fingers so that the cross bar rests on them. When the patient is certain he can no longer feel the vibration of the fork, the time is again noted. A normal person will stop

feeling the vibration in 35 seconds.

The vibration sense, Major Roth explains, belongs to the group of sensations which include deep pressure, position, weight, form and vibratory sensations. Although it would be a great advantage to have a means of determining quantitatively impairment in any of these deep sensations, physicians so far have had to be satisfied with determining whether such an impairment exists and whether it is mild, moderate or severe.

With the neurometer, Major Roth believes, much more exact measurements can be made. He has noticed that vibration sense at the fingers is lessened when the fingers are cold, in general fatigue and after strenuous exercising of the fingers. It is at its greatest after a refreshing sleep. It also varies with different regions of the body, being greatest at the finger tips and zero over the eyelids.

Further studies with the aid of the neurometer, Major Roth believes, will give much valuable information to neurologists and practicing physicians as well as possible aid to aviation medicine.

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## PHYSICS

# Magnets Replace Clamps

Equipment for optics experiments held in place without troublesome clamps by small but powerful magnets. Can be used in vertical position.

➤ INSTEAD of troublesome clamps, physicists can now use small but powerful magnets in setting up for war-important optical experiments intricate and complex arrays of lenses, lamps and diaphragms.

This new trick of the laboratory was reported to the Optical Society of America meeting in Pittsburgh by Norman F. Barnes of the General Electric Company.

Powerful Alnico magnets hold the supports for the lenses, lamps and diaphragms rigidly in place, yet any component of the optical system can be moved easily and precisely on the steel

base plate. This type of optical bench is especially adaptable to three-dimensional optical systems and can even be used in a vertical position.

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## Telephoto Lens in Reverse

➤ TO ALLOW a surgeon to magnify the region he is probing and yet be a considerable distance away from it, Dr. Max Reiss of the Eastman Kodak Company has put into reverse the familiar telephoto lens for cameras.



*BAD LANDS—But a good photograph. This print, entitled "Desert Draperies," was made by Juanita Schubert, of Minden, Nevada, and was honored by selection for exhibit in the First International Photographic Exhibit of the Field Museum of Natural History from September 15 to November 15.*

The common magnifying glass has to be placed within an inch or two of the object to be magnified, he explained to the Optical Society of America. However, it is frequently necessary for surgeons and eye physicians to be some distance from the specimen they are examining, and hence they need a magnifier that will work at a distance. The new telephoto magnifier, essentially the telephoto lens used on cameras turned around backwards, enables the surgeon to use his instruments, and the eye-doctor his probing lamp, while seeing an enlarged image of his subject.

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## New Rifle Sighting

➤ GREAT SAVING of time, labor and ammunition is obtained in a new method for adjusting the sights of the Garand rifle, described C. B. Sitterson, Jr., and Norman F. Barnes of the General Electric Company to the Optical Society of America.

Formerly the sights of the rifle were adjusted by trial and error, a tedious and wasteful, although very accurate, process. Sitterson and Barnes found that the last few inches of the bore of the rifle determined the trajectory of the

bullet. By shining a point of light on a small concave mirror inserted a few inches into the muzzle of the rifle, they were able to project accurately the alignment of the bore in space upon a screen. Then it is an easy matter to adjust the sights of the rifle to their correct positions, also indicated on the screen—and without firing a single bullet!

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PSYCHIATRY

### It Is No Disgrace To Be Somewhat Neurotic

► "IT IS GOOD to be somewhat neurotic," declares Dr. Walter C. Alvarez, of the Mayo Clinic, in his new book, *Nervous Indigestion and Pain* (Hoeber).

This should cheer up many a person who, besides his or her other sufferings, has to bear the feeling of blame or disgrace that is too often associated with the word "neurotic." Actually, the term can be taken as a compliment, Dr. Alvarez tells his patients.

"If a woman is to have any vivacity and social charm she must be nervous and highly sensitive," he declares. "Without these qualities she cannot be wide-awake and responsive and interested in people and in everything that is going on about her; without it her face will not be mobile and attractive, her eyes will not light up and her conversation will not be animated. But it is just this ability to feel keenly and to react strongly that commonly brings in its train fatigue and suffering."

The nervous make-up that can make a person feel "in the seventh heaven" while hearing a symphony, or weep at a sad play, also can make a person feel great distress or even pain after a hearty meal which would give a less nervous person a comfortable feeling of having his stomach well filled.

Although Dr. Alvarez has written this book for physicians, especially those just starting to practice medicine, there is much in it that will help the intelligent person whose nerves often make him sick and weary. One of the important points which neurotic patients may learn from the book is to recognize what they are really like. Half the battle for relief from suffering and undue fatigue may be won if the patient can stop worrying because his sensitive nerves make him feel unpleasant things and minor annoyances just as keenly as he feels the beauty of music or delight and joy in pleasant sensations.

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NAVAL SCIENCE

## DE's Are Seaworthy

Article in Naval Institute Proceedings reveals that destroyer escorts are "not so little"—much larger than World War I destroyers.

► DESTROYER escorts are "not so little," and they are more seaworthy than a widespread popular notion gives them credit for being, declares Lt. Ashley Halsey, Jr., U.S.N.R. (*United States Naval Institute Proceedings*, September) As a matter of fact, they are bigger than the average destroyer on fleet duty during World War I, and come within a few tons of the displacement of destroyers launched as recently as 1931-32. They are topped only by the newest destroyers, which displace from 1,500 to 2,000 tons or more.

The DE's may have got their ill name from the fact that they were designed primarily for combatting U-boats, and thus have become confused with the Eagle-boat class of World War I date. The latter craft, waspishly slim, knife-bowed and displacing only 500 tons on a length of 200 feet, were definitely sea-going bronchos. Lt. Halsey comments that it may be just as well that Eagle boats did not come into full production until after the Armistice in 1918.

The new destroyer escorts, by contrast, are more than two-and-one-half times as big as the Eagles, and a good bit beamier, displacing 1,300 tons on a length of about 300 feet. This makes them much larger than the World War I destroyers, which averaged less than 800 tons, and puts them fairly in the class with the later-built Farragut class, with its 1,375 tons.

Speed of the DE's is still a secret, though it is of course no secret that they can go fast enough to overhaul U-boats cruising at 20-knot surface speeds in relatively short order.

Details of armament also are not revealed, though the official statement has been made that the DE's can shoot it out with German and Jap subs known to mount three- and four-inch guns. Illustrations accompanying Lt. Halsey's article show the forward armament of one destroyer escort to consist of two three-inch dual-purpose guns, which were standard anti-aircraft armament even for battleships until just before the present war. These high-velocity weapons certainly could drill holes in the hull of any submarine on which they were train-

ed. In addition, there are stated to do a number of the deadly, machine-gun-like 20-millimeter Oerlikons.

Most effective weapons of the DE's, of course, are depth charges, of which these handy vessels carry "plenty." Lt. Halsey indicates that at least some of them also mount torpedo tubes.

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GEOGRAPHY

### Kos, Cos or Coo in Aegean Has Important Location

► KOS, Cos, Coo or Stanko, whichever name you want to use, an important Grecian Archipelago island just now because in an active combat area, is small in size and relatively large in history—mostly ancient. It lies close to the shores of Asiatic Turkey, is populated largely by Greeks, is an Italian possession and is an important British-German combat area..

This little elongated island, about 25 miles long, is one of the Dodecanese group which includes Rhodes, Scarpanto, Lero and ten other islands, a total of 13—not 12, as is indicated by the name. They became Italian possessions in 1912 by treaty between Italy and Turkey after Italian occupation.

Kos lies about 65 miles along the Turkish coast from Rhodes. Its eastern extremity is about two miles from the mainland. It is some 25 miles farther south than Lero, where the Italians had established a naval base.

At the city of Cos on the island there is a harbor which may be used only by small boats. Outside is a roadstead suitable for anchorage of large boats. Ancient Greeks valued them as a naval outpost.

Much of the fame of ancient Kos centers about the physician, Hippocrates. It had what is claimed to be the first school of scientific medicine. It was known also as a seat of learning.

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An "animal unit" used in defining carrying capacity of grazing land is one cow or five sheep.