

## 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.

*Science News Letter, October 16, 1943*

## 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.

*Science News Letter, October 16, 1943*

## 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