MEDICINE

Test Resistance to Strain

Harvard's varsity and combination crews helped in finding blood test to tell those able to withstand emotional stress and srain.

➤ THE HARVARD varsity and combination crews have helped scientists find a simple blood test to screen persons for ability to take emotional stress and strain.

The test is for the number of eosinophil cells circulating in the blood. These cells get their name because they are easily stained by the rose colored dye, eosin.

The number of them circulating in the blood, according to scientific theory, is an index to whether the adrenal glands, producers of cortisone and adrenalin, are responding normally to stress. Normal glands in a person under stress presumably produce more of the hormones which in turn reduces the number of eosinophils.

To test this theory under really strenuous situations, instead of under artificial, laboratory stress situations, four Harvard medical scientists made eosinophil blood tests on coaches, coxswains and crewmen during training for and before-and-after the Harvard-Yale races last June. The scientists are Drs. Albert E. Renold, T. B. Quigley, Harrison E. Kennard and George W. Thorn.

Sports fans will remember that this varsity four-mile race was, as the scientists put it, "extremely hard and tense, won by only a quarter of a length, with a spectacular and, to the crew, frightening finish."

In the varsity crew, within four hours of the first time trial for the race, the average eosinophil blood count of 123 was reduced to 19. Immediately before the actual race the average count was only 64 and fell to three within four hours.

Although the combination crew also showed a drop in eosinophil count after the time trial, there was no fall after the race, and in fact a slight rise from 42 to 59. The combination race, however, differed from the varsity in that it was won by six lengths, with Harvard leading easily all through and no doubt about the outcome.

"In well trained persons," the scientists conclude, "emotional stress, either alone or in combination with muscular activity, may lead to a highly effective adrenal stimulation."

This, they point out, may represent a necessary link in the body's mechanism of adaptation to stress.

By putting persons under conditions of standardized stress and making eosinophil blood counts, two groups can be easily identified. These are: 1. those with unsatisfactory response to stress; 2. trained persons in whom the particular exertion does not exhaust physical or emotional reserves.

Both groups will show apparently inadequate eosinophil counts, because physical as well as emotional stress affects the stress adaptation mechanism. But, the scientists point out, the difference between the two groups will be obvious at a glance.

Details of the study are reported in the NEW ENGLAND JOURNAL OF MEDICINE (May 17).

Science News Letter, June 2, 1951

ASTRONOMY

New Camera Photographs Meteors Small as Buckshot

➤ A NEW camera, first ever designed exclusively for tracking meteors, will photograph 40 times as many "shooting stars" as are caught with sky cameras now in use.

Meteors as small as buckshot will be photographed by this 5,000-pound camera. The Super-Schmidt meteor camera is so fast its limiting exposure, even on a black cloudless night, is six minutes. The "wide-eyed" camera photographs one-tenth of the visible sky at one time.

Film for the camera will probably be carried around in milk cans. It is shaped like a salad bowl because the converging light rays in the camera form a curved focal plane. The curved film holder and rotating shutter are placed in the center of the camera in front of the inner lens. Their position makes the camera unlike any other, because the optical system must be taken apart each time the camera is loaded.

The camera is being flown to one of the Harvard Observatory's two meteor stations near Las Cruces, N. Mex. Another just like it, to be delivered within a few months, will be operated simultaneously about 18 miles away. Then meteors can be accurately tracked by comparing the positions of their bright trails on the two films.

Study of meteors is important to increasing our knowledge about the upper atmosphere. Because "shooting stars" perform much like bullets and other projectiles, such information is useful to the armed forces in their rocket experiments.

In all, six such meteor cameras are being made. In addition to the two for Harvard, which for the past decade or two under the direction of Dr. Fred L. Whipple has been pioneering in meteor research, two are for Canada's Dominion Observatory in Ottawa, and two for the U. S. Air Force Geophysical Research Directorate in Cambridge, Mass. Since 1946 the meteor program has been financed by the U. S. Navy.

The radically new optical system of the Super-Schmidt camera was designed by Dr. James G. Baker, Harvard research associate and chief optical consultant of the Perkin-Elmer Corporation, Norwalk, Conn., that is building the cameras.

Science News Letter, June 2, 1951

METEOR CAMERA—To learn more about meteors, this super-Schmidt camera will track and photograph shooting stars. Graham Wallace of the Perkin-Elmer Corporation of Norwalk, Conn., the firm that built the camera, is operating the aiming controls.