

recorders can police atomic explosions successfully. There are over a hundred standard seismograph stations together with many non-standard or temporary stations involved in this program around the world including Antarctica.

This seismological record will give scientists a better understanding of the earth's interior. This is one objective of the renewed interest in the crust of the earth which resulted from the International Geophysical Year.

Laser Research Advances

The devices called lasers and masers for concentrating light and electromagnetic spectrum energy will have further development during the year and find additional uses. Some of them will be used in industry and others will join the instrumentation that scientists use in various areas including space.

Oceanography has been given increased attention and an international survey of the Indian Ocean will be underway during the coming year.

There probably will be some progress on Mohole Project in drilling a deep hole in the floor of the ocean reaching down to the inside of the earth.

While Mt. Everest, the highest mountain on earth, has been conquered, a new expedition will ascend it during the year in the interest of more scientific information and to demonstrate that what once has been accomplished can be done again.

There will be additions to the more than 500 nuclear reactors that have been built in the first two decades since the first atomic chain reaction. The number of large reactors producing commercial power is not expected to increase rapidly, because atomic power is still not competitive commercially with conventional power production except in a few isolated spots.

It is predicted that by 1970 only about two per cent of all electric power will be

produced by atomic reactors, but within the decade following all the new electric generating capacity built will be nuclear. Giant accelerators, the size of which could hardly be imagined as recently as a decade ago, will approach completion and the ones already in operation will dig deeper into the secrets of the atom with unpredictable results for theory and practical utilization.

A measles vaccine will become available during the year. Progress in making available this immunization has been slower than was expected a year ago. The new chemical preventive of malaria should be extended during the year to the areas of the world where this is a major disease causing much illness and death.

Study of mental retardation as well as the major psychiatric diseases will receive new emphasis and an expanded program of community mental health will receive national impetus.

The research on cancer, heart disease, and some of the other major unconquered diseases will continue energetically but what will develop is difficult to predict.

Peaceful Power Research

The harnessing of the atomic fusion reaction of the hydrogen bomb to give useful power may occur but again this progress has been slower than had been hoped. Developing more knowledge about the mechanism of capturing the sun's energy through photosynthesis will probably result from research underway.

Man is always curious about his evolutionary rise and new studies are in progress on the way that modern races originated. New pre-human remains should be unearthed in various parts of the world. Some anthropologists expect that there will be a reconsideration of the common assumption that the modern races are no more than about 20,000 years old.

• Science News Letter, 82:411 December 29, 1962

PSYCHOLOGY

Action Indicates Tension

► SAYING the wrong word or acting in an unusual manner may indicate that you are under tension.

Research by University of California, Los Angeles, psychologists Dr. William E. Broen Jr., Lowell H. Storms and Herbert U. Schenck Jr. indicates that normal stress or drive to achieve a goal produces almost random responses to particular situations.

For example, in a word association test one may respond to the word, "table," with "chair" 60 per cent of the time, with "cloth" 30 per cent of the time, and with "dinner" 10 per cent of the time.

Thus an order, or hierarchy, of responses is established with "chair" the dominant response, "cloth" somewhat down the ladder and "dinner" still further down.

The research has indicated that stress facilitates all responses. But there is a ceiling on the strength of the responses, and under high stress the hierarchy of responses tends to be telescoped upward so that all are grouped near the ceiling. Thus the chances

that one may respond with any one of the three words are almost equal.

These observations may account for inappropriate behavior by both normal persons and emotionally disturbed individuals.

An example of normal behavior might be the verbal "flubs" by radio and television announcers and by politicians in the heat of a campaign.

An example of response to extreme stress might be the bizarre behavior of some men in combat. Such behavior has led to a temporary diagnosis of schizophrenia. But symptoms suggesting the diagnosis frequently disappeared once the stress of combat was removed.

Dr. Broen believes this phenomenon may explain the unpredictable behavior of schizophrenics under the constant stress of their emotional illness.

• Science News Letter, 82:412 December 29, 1962

Studies show that two-thirds of all persons over 50 years have weakened *capillaries*.

Questions

ASTRONOMY—What month brings the year's best display of evening stars? p. 420.

ASTROPHYSICS—Where is the graphite formed that peppers space in minute flakes? p. 410.

BIOCHEMISTRY—From what animals is the present insulin supply obtained? p. 414.

MEDICINE—Which are more numerous, typhus or typhoid carriers? p. 413.

PSYCHOLOGY—What are common word associations with the word "table"? p. 412.

ZOOLOGY—How are restless mink calmed? p. 428.

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