

calculations made by L. E. Cunningham, Aberdeen, Md.

"The comet is likely to appear as a faint, fuzzy patch of light, and can be distinguished from the many nebulae in the region by its motion past the stars," Mr. Cunningham states. "When this motion has been definitely proven, the position should be reported to the Harvard College Observatory."

Since its discovery on Sept. 13 the comet has moved into the part of the sky near the sun and is lost in the twilight. A cablegram from the Carter Ob-

servatory, Wellington, New Zealand, sent in reply to a request from Mr. Cunningham, states that the comet was last observed on Sept. 16.

At the time of its discovery, the comet was of the fifth magnitude and so was faintly visible to the naked eye. Three days later, however, it had faded to the sixth or seventh magnitude, and required a small telescope to see it. Unless the comet is accidentally rediscovered after it emerges from the morning twilight, its orbit will remain unknown.

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PSYCHOLOGY

Better Brain Wave Record

Use of television techniques suggested as aid for understanding the mechanism of mental activity. Lack of suitable instruments only bar to plotting brain messages.

► ELECTRICAL engineers who have solved the scanning problem in television could help solve the technical problems now hampering scientists trying to understand the mechanism of mental activity through study of the electric potentials of the brain, Dr. R. W. Gerard, physiologist of the University of Chicago, declared at the National Electronics Conference in Chicago.

Only lack of suitable instruments, he said, "prevents the plotting of every single message which travels anywhere in the brain."

The philosophical arguments over whether man has a free will might some day be settled on the basis of physical measurements of electrical activity in the brain, he hinted.

Such measurements, in the form of brain wave tracings, have already told scientists some things about brain activity and make possible the detection of unsuspected epilepsy, location of brain tumors, and the like.

"By all means the most dramatic thing about the brain waves," Dr. Gerard said, "is that they exist with the subject at rest and are actually fragmented by activity. The main, or alpha, rhythm is most pronounced in a person sitting relaxed in a dark room. Mental effort, mild emotion, or sensory stimulation, especially by light, disrupts it. Experiments on other animals, notably the frog, prove what the human observations suggest; that the brain has a spontaneous electrical beat, as automatic as that of the heart, which is modified by but not dependent on outside stimulation.

"This major discovery has changed our thinking about the brain; from the picture of a passive telephone system which is inactive unless receivers are up, to one of a system in continuous activity and able to start its own messages as well as to receive others. This does not yet quite make a place for free will but it does fit far better with the facts of conscious experience."

Among problems still to be solved is how metabolic energy is transformed into rhythmic membrane potential waves. The membranes which surround all living cells, Dr. Gerard explained, are differentially permeable to ions and become polarized or charged as condensers. They are kept charged, commonly to about 50 millivolts, by energy released in the course of cell metabolism, mainly by the oxidation of sugar.

Besides the transmembrane potential, there is evidence of another maintained potential from end to end of the nerve cell but no clue as to how it is produced.

"The myriad cells, arranged in fairly regular layers in the brain cortex, beat in synchrony to a large extent—it is only then that the brain waves are ordinarily measurable—but also form spacial activity patterns and are modulated by incoming nerve signals," Dr. Gerard stated. "Part of the synchronization mechanism, at least, does not depend on nerve messages but probably on electric fields of wide extent, and these may also contribute to the spacial patterns. These problems cannot be resolved by leading from the scalp even with dozens of electrodes, the spacial variations are too great

and the pick-up too wide-spread.

"One line of research, possible on man only when head operations permit work on the exposed brain, but widely applied to animals, is to insert microelectrodes into known brain regions or even, with microscopic accuracy, against or into particular nerve cells. This latter maneuver has permitted the direct measurement of membrane potential, impedance, etc., but it demands further improvement in high-resistance input voltage amplifying systems.

"Another direction of movement has

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been indicated by the use of large numbers of macroelectrodes on scalp or brain to permit a spacial sampling of the surface potentials of a whole brain or a large area of it. The present sampling is, of course, inadequate and, worse, with but a few channels these must continuously be switched from one set of pick-up leads to another. The problem seems to

me entirely comparable in principle to the scanning problem in television. There also, the potential contours of a surface must continuously be measured. You have solved the television problem in several ways; I am convinced that you could help us solve ours with your present knowledge."

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PUBLIC HEALTH

Mental Health Plan

A program to rebuild the mental health of homeless trailer children who have had an unfortunate start in life due to the war will be necessary.

► A TOTAL health reconstruction program to conserve America's human resources after this war should include a plan for rebuilding the mental health of homeless trailer children who have an unfortunate start in life due to the war, Dr. Robert V. Seliger, of the Johns Hopkins University Medical School, told a New York meeting of the Medical Correctional Association.

"Think," he said, "of the thousands of migrant families in America over the last decade only, their 'home' a rented room or trailer; their children's schooling interrupted or discontinued because of 'seasonal' jobs; their community roots and ties centered in, and delimited by, the poolroom and movie house.

"These children, whose lives are existences merely, tunnelled through with emotional maladjustments, insecurity, confusion of purposes in life, lack of community fellowship or 'belongingness', improper, inadequate diet and a blighted family life, are the juvenile delinquents of today and the citizens of tomorrow. They will make and enforce our laws. They will bring forth children of their own. If such conditions remain unremedied, only a feeble-minded optimist could look to a bright new future.

"We have, therefore, much more to deal with than mental illness as such. We have to deal with a total health problem for the individual and for the community."

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Treatment for Criminals

► A TYPE of criminal considered the most dangerous, irritating and persistent—those known as psychopathic personalities—can be successfully treated by a new kind of mental therapy, called hypnoanalysis, Dr. Robert M. Lindner,

of the U. S. Public Health Service, told the meeting.

The method is a sort of combination of hypnosis and psychoanalysis and succeeds where ordinary psychoanalysis would be a failure due to lack of cooperation on the part of the criminal, he said. It requires much less time than psychoanalysis; no one case taking more than 50 hours of the physician's time. There have been no failures, he said, except in cases where for extraneous reasons the treatment was discontinued.

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Courts Need Psychiatrists

► UNIFORM provisions are needed for the mental examination of defendants coming before Federal courts, Dr. Lawrence F. Woolley, clinical director of the Sheppard and Enoch Pratt Hospital, Towson, Md., told the meeting.

Although, under an excellent law which became effective in 1936, the Public Health Service is authorized to appoint a panel of psychiatrists for each Federal jurisdiction to give impartial advice to the Court, actually this law is not being fully carried out, Dr. Woolley revealed.

In some Federal jurisdictions the opportunity is welcomed, and panels of qualified psychiatrists were created and are being used, he said. But in other jurisdictions, nothing much has been done.

Even where the panel of experts is available, he indicated, a defendant in court is not always examined. It depends to some extent upon the recognition of a problem in psychiatry by someone interested in the court proceedings.

Dr. Woolley urged the routine examination of all defendants. The psychiatric

report should do more than give a statement as to the sanity of the defendant, he said.

"We have progressed sufficiently in this field to recognize that such a statement is the least valuable part of the record. More to the point would be formulations which enable the various interested parties to understand the personality of the defendant, the forces playing upon him and the dynamics of his behavior. This insures a fair accuracy of prediction as to the future conduct of the defendant and makes possible the carrying out of a program best calculated to prevent recurrence and insure rehabilitation when possible."

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SEISMOLOGY

Turkey's Earthquake in Same Region as Before

► THE STRONG earthquake recorded in the interior of Turkey late on the night of Oct. 5, and reported to have taken 50 lives, had its center in the same general region as the serious quake of Feb. 1, 1944, U. S. Coast and Geodetic Survey seismologists believe on the basis of reports received by them and Science Service from Georgetown University, Weston College, Mass., St. Louis University and the Coast and Geodetic Survey station at Tucson, Ariz.

The epicenter is placed, from these reports, in the region of 39 degrees north latitude and 32 degrees east longitude, which is about 100 miles southwest of Ankara. The Feb. 1 earthquake had its epicenter at 41 degrees north latitude and 31 degrees east longitude.

It is believed that other parts of Turkey, east of Istanbul, have also been shaken.

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ASTRONOMY

Double Star Is Composed Of Two White Dwarfs

► THE FIRST double star of which both components appear to be white dwarfs has been located by Dr. W. J. Luyten of the University of Minnesota, according to a report to Harvard College Observatory.

The double star, LDS 275, is located in the southern constellation of Antlia, the air pump. The two white components appear to be of about equal brightness, their photographic magnitudes being 14.1 and 14.4.

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