PHYSIOLOGY

Electrical Instruments Used To Study Currents in Brain

ELECTRICAL instruments so delicate that they will register a millionth of a volt are being used to explore microscopic areas of the brain, Prof. C. Judson Herrick, of the University of Chicago, told the American Association for the Advancement of Science. Information thus obtained is expected to revolutionize our whole knowledge of the way the human mechanism works.

"I venture the prediction that the electro-biological era now beginning will yield as revolutionary changes in our conceptions of the physiology of the nervous system as the invention of the microscope inaugurated in anatomy," Prof. Herrick said.

There are from ten to fourteen billion nerve cells in the cerebral cortex—the part of the brain with which we think—and they are arranged in definite patterns. It is the little electric currents that flow from cell to cell and from group to group that the new electrical methods are measuring.

This new knowledge of inter-cell telegraphy in the brain promises to yield positive results in understanding differences in behavior between man and his evolutionary cousins, the higher apes, and among the human races themselves, that the older methods, which depended on the study of the grosser features of the brain, could only block out roughly.

Science News Letter, July 1, 1933

METEOROLOGY

Summer, Though Young, Already Breaking Records

THOUGH the summer is still very young, this year's hot season has already made a record for itself, according to reports of the U. S. Weather Bureau at Washington, D. C.

There was abnormally hot weather in a large part of the north while frost has visited regions much farther south, J. B. Kincer, chief of the Climate and Crop-Weather Division of the Weather Bureau, pointed out. In the middle of June a large region centering around the Dakotas suffered from an average temperature of fifteen degrees above normal for a whole week. At the same time cool weather brought an average of nine degrees below normal to a large part of the east with frosts as far south as the Shenandoah Valley of Virginia.

Drought was coupled with heat in the north central part of the country and also extended over practically all the south. It is most unusual for so many states to lack rain at the same time, Mr. Kincer explained.

He said he did not recall a week during which as little rain fell over the whole country as that which ended on June 20. The rainfall map for those seven days shows about half the country, mostly the Mississippi Valley, without a drop of precipitation. He explained that there had been scattered local rains, but that large regions as a whole were very dry.

Science News Letter, July 1, 1933

PHYSICS

Magnetic Device Knocks H From Matter

FOR THE FIRST TIME in history H has been knocked out of matter by artificial means.

The H in this case stands for hydrogen. The ejection of a proton, or hydrogen heart, from a collision between a heavy-weight hydrogen atomic heart and a carbon atom, reported to the American Association for the Advancement of Science by Prof. E. O. Lawrence of the University of California, is considered an important step forward in our knowledge of the constitution of matter and its relation to energy.

Prof. Lawrence, with his unique "merry-go-round" magnetic device for accelerating atomic projectiles, hurled some of the newly discovered double-weight hydrogen atoms at carbon of mass twelve. The carbon gained one unit of mass, or weight, and a hydrogen atom of ordinary weight was expelled in the form of a proton. One and a half million volts was fed into this synthesis and seven and a half million volts were emitted, a large release of energy.

About two decades ago Lord Rutherford in England was the first to perform an atomic synthesis and knock H out of matter. He used the streams of helium atomic hearts, or alpha particles, that are released in the radioactivity of radium and other elements. Prof. Lawrence's success in performing synthetic transmutation of a heavier element out of a lighter one with significant release of energy is an important new development.

Science News Letter, July 1, 1933

IN SCIEN

PHYSICS

Atomic Bombardment Breaks Up More Elements

NEW SUCCESSES in a new method of element transmutation were announced by Dr. J. D. Cockcroft, young physicist from Britain's famous Cavendish Laboratory to the American Association for the Advancement of Science.

The idea that atomic particles have warlike properties and can force themselves into the hearts of atoms led to atom smashing that released very large amounts of energy. Lord Rutherford's first transmutations two decades ago were atom building without energy release.

Dr. Cockcroft first turned lithium and a projected hydrogen heart into two helium atoms. Now he announced the disintegration of boron into three helium atoms, the breaking up of fluorine into oxygen and helium and the change of beryllium into lithium and helium when bombarded with hydrogen.

Science News Letter, July 1, 1933

MEDICINE

Fungi Infect Lungs Causing Symptoms Like Tuberculosis

THIRTEEN different fungi which may infect the lungs and cause symptoms like those of tuberculosis were described at the National Tuberculosis Association meeting.

These fungi can be roughly divided into three classes, Dr. David T. Smith of Duke University, Durham, N. C., said. The three classes are the yeast-like fungi, mold-like fungi and the higher bacterial forms.

Dr. Smith recommended treating all types of fungus infections with large doses of potassium iodide, beginning with one drop of a saturated solution three times a day and working up to sixty drops three times daily. Patients who do not respond to this treatment are given in addition ethyl iodide inhalations.

Science News Letter, July 1, 1933

CE FIELDS

HOME ECONOMICS

Best Designs Not Followed In Clothes for Children

APPARENT indifference and an astonishing lack of knowledge on the part of designers as to the relationship between clothing and the physical development of the young child was charged in an address before the American Home Economics Association, by Ellen Miller of the Merrill-Palmer School of Detroit.

Miss Miller declared that manufacturers, merchants, and buyers should be aware of such information as scientific tests have produced.

"Well-designed clothing contributes to the child's growth in self-reliance and to his mental and physical health," she stated.

Further investigation of suitable garments for children is needed, the speaker said, urging that most teachers can make experiments. Teachers can collect the experiences of parents or nursery school teachers with children's clothing for different ages, she explained.

Science News Letter, July 1, 1933

PSYCHOLOGY

Intelligence May Be Increased By Education

THE IDEA held by many modern psychologists that your intelligence is something fixed and not to be changed by education or environment was condemned by Dr. Frank N. Freeman of the University of Chicago in speaking to the Conference on Research in Child Development held in Chicago by the National Research Council.

"It is at least conceivable that intellectual training may improve intelligence, as it has been defined," Dr. Freeman said. "The pace of mental operations may very well be influenced by practice, and mental alertness probably varies considerably with appropriate training."

Ability to concentrate the attention, to think effectively, to avoid fallacies, and to grasp difficult relationships between thoughts, are among the other aspects of intellectual ability which Dr. Freeman declared could be improved or controlled by proper education.

Intelligence tests given to children of defective parents who were adopted into superior homes, to children of the same family adopted into families of differing advantages, and to identical twins who had been brought up separately, give results showing that the intelligence of adults in the home and the type of education do have considerable effect on a child's mental ability. Not only does he increase in knowledge when given advantages of proper training, but his ability to learn is also increased.

There is no such thing as intelligence apart from training, Dr. Freeman said.

"Ability is always a composite of the two, and the belief that they can be separated by means of tests is an illusion."

Science News Letter, July 1, 1933

MEDICINE

Wandering Spleens May Cause Illness

WHEN THE SPLEEN gets wanderlust and strays from its normal place in the body, it may cause acute illness with pain, nausea and vomiting like an attack of appendicitis, Dr. Arvin Abell, Louisville, Ky., surgeon, told members of the American Surgical Association.

The spleen plays a role in the final disposition or destruction of the red blood cells. Normally this organ is located in the upper left part of the abdomen. But sometimes it wanders from this spot and may be found located any place in the abdomen.

The condition of wandering spleen is predominantly an ailment of young women. Out of ninety-five cases, which were all Dr. Abell could find recorded, as this is a rare complaint, ninety were women. The exact cause is not known. Dr. Abell thinks the condition exists at the birth of the individual, but is not discovered until later when it causes acute illness. In his two cases, the spleen had twisted on its stem, shutting off the blood supply.

The remedy for the ailment is removal of the spleen. Fortunately, this organ can be easily dispensed with. The difficulty is that physicians are not apt to recognize the symptoms as due to a wandering spleen because the trouble seems to be so remote from where the spleen normally would be.

Science News Letter, July 1, 1933

PHYSIOLOGY

Brain Adjusts Man to Extremes of Weather

MAN'S SUPERIOR brain makes it possible for him to live in a world of extreme kinds of weather and other varying conditions, Prof. James Barcroft, the British physiologist, told the American Association for the Advancement of Science.

The highly evolved brain of the human being holds unconscious control of his blood's chemistry and physics. The resulting constancy of his blood conditions make him relatively independent of heat, cold and other changes in the outside world that hamper the lives of his less fortunate lower animal kin.

In the evolution of life, as pictured by Prof. Barcroft, efforts of the lowest organisms to make themselves more at home in the world were at first aimed merely at so arranging their own lives that outside conditions would be less hard on them. They did not make much progress at changing and controlling their own internal conditions.

Higher in the evolutionary scale, Prof. Barcroft believes that the first steps toward internal regulation were chemical. Then control by the nervous system began to assert itself until finally the brain became dominant in maintaining the continuing uniformity of the blood.

Science News Letter, July 1, 1933

PUBLIC HEALTH

Pictures on Paper Reduce Cost of X-Raying

THE COST of detecting tuberculosis in high school pupils was cut in half by the use of paper X-ray pictures, Dr. H. R. Edwards of New Haven, Conn., told the National Tuberculosis Association.

The paper X-ray photographs replaced celluloid films for tuberculin tests. They were said to be equal in quality to the celluloid X-ray films and they could be handled much faster and with less eye strain on the physician examining them.

The total cost of detecting 960 cases out of 6,393 examinations and referring them to the family doctors, including the cost of the paper X-rays which were paid for by the parents, was $6,255. The actual cost per case was $6.51.

Science News Letter, July 1, 1933