MEDICINE

X-Rays Cure Rare Disease, Changing Girl's Personality

Cleveland Meeting Hears Reports of Life-Saving Uses For Roentgen Rays, New Techniques, Scientific Methods

HOW X-RAY treatments of the pituitary gland lying deep within the head transformed a fat, weak, bearded, sexless person into "an active, attractive, wide-awake young woman" was reported by Dr. Merrill C. Sosman of the Peter Bent Brigham Hospital, Boston, to the American Roentgen Ray Society meeting in Cleveland, Ohio.

This patient and two others reported by Dr. Sosman were suffering from a rare disease known as pituitary basophilism. The disease, discovered by Dr. Harvey Cushing, noted brain surgeon, is caused by a tumor affecting certain cells of the powerful pituitary gland. Because the pituitary is the leader of the endocrine gland orchestra, disease of the pituitary affects all the other glands and causes striking disorders and changes throughout the body and in the personality.

Other tumors of the pituitary gland are not so rare and are more easily detected than this particular one, Dr. Sosman pointed out. In fact, the symptoms of this disease are so many that disorder of a number of other glands may appear to be the cause of the patient's illness. If further study shows that X-ray treatments will cure or relieve the condition, as Dr. Sosman's results indicate, the diagnosis can be confirmed by giving such treatments and noting the results, it was pointed out.

Striking Results

Of the three patients reported by Dr. Sosman, one died of brain hemorrhage before any results of the treatment were apparent. The other two showed "striking results with practically complete return to normal."

Chief symptoms of this rare malady, Dr. Sosman said, are: peculiar, painful fatness of the face, neck and trunk; excessive, male-like hair on the face, arms and legs of female patients, and a thinning of the normal head hair; softening and frequently spontaneous fractures of the bones, due to excessive excretion of calcium; twisting of the spine, backache and actual loss of height because of the same bone condition; excess red blood cells in the hands and feet and particularly in the face, which becomes so swollen and red that it "seems about to burst like an over-ripe tomato;" weakness, becoming so bad the patient is bedridden; high blood pressure, sometimes resulting in a fatal hemorrhage into the brain; and a low basal metabolic rate. Sexual changes may also occur.

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OBSTETRICS

Babies' Heads Measured Before Their Birth

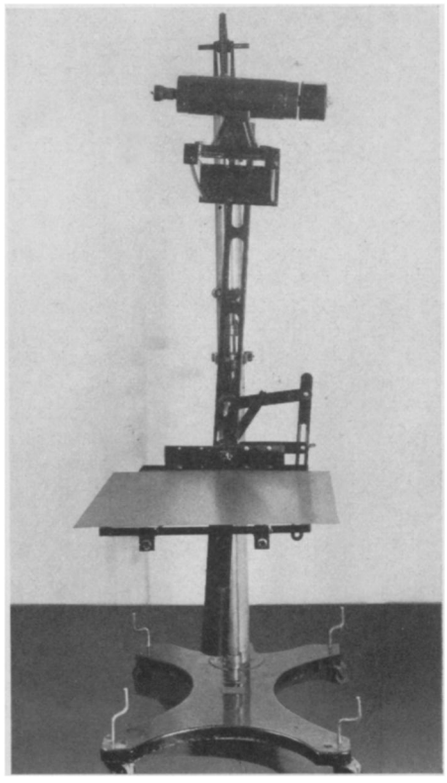
A COMBINATION of X-rays, geometry and World War medicine is helping to make life safer for mothers and their babies.

How the combination works was demonstrated by Dr. Paul C. Hodges of the University of Chicago in an exhibit at the meeting of the American Roentgen Ray Society.

The starting point was a method devised by Dr. Mackenzie Davidson of England to locate bits of shell and other foreign matter blown into the bodies of soldiers during the War. X-ray pictures of the same bit of shell were taken from two different angles and the resulting films laid on top of each other in proper position. The distance between the outlines of the object in the two pictures is measured, and by geometrical calculations, the size of the object and its distance from the surface of the body can be determined.

Dr. Hodges has applied this method, with some improvements, to measuring the size of the head of the unborn baby and the bony outlet through which it must pass. If the head is too large for outlet, the physician knows that it will be dangerous for the mother to have her baby by natural processes and can plan for a surgical operation. To assist in getting accurate measurements, Dr. Hodges has devised a light-weight frame which fits snugly around the mother's back and sides while the X-ray pictures are being taken.

In addition to getting accurate knowledge of the size of the baby's head in relation to the birth canal, Dr. Hodges has combined X-rays, geometry and algebra to determine the age of the unborn child more accurately than is possible by other methods of calculation. This is determined from back-to-front and side-to-side measurements of the baby's head. The head measurements are compared with tables worked out by two University of Minnesota scientists, Drs. L. A. Calkins and R. E. Scammon, who measured hundreds of skulls of babies that had died before birth, and cor-



TOMOGRAPH

This is a new X-ray dissecting machine exhibited by Dr. J. Robert Andrews of University Hospitals, Cleveland, at the meeting of the American Roentgen Ray Society. Operating on a lever principle, the X-ray tube and the film rotate about any desired layer of the body, giving a picture which is an image of that layer only. Ordinary X-ray pictures give images, superimposed on each other, of all parts through which the X-rays pass and one part may obscure others. The tomograph is expected to be particularly helpful in diagnosing brain tumors or other diseased conditions in the head or in the chest which at present are difficult to see clearly with ordinary X-ray methods. The principle of the tomograph was developed in Germany. Dr. Andrews' experimental machine, the first in this country, was designed by Robert J. Stava.

related these with the age of the unborn babies.

In cases where the head is deformed or cannot be measured by X-ray methods before birth, the length of the thigh is used to determine age. This measurement is possible as a result of research by Dr. Ruth Stocking in Dr. Hodges' laboratory. Dr. Stocking worked out a way of calculating the length of the thigh from measurement of the length of the shaft, since this is all that shows in X-ray pictures of unborn babies, the ends of whose thigh bones are not developed enough to show in X-ray pictures.

Knowing the age of the unborn child, the physician can tell not only when the child will be born, but also whether or not the child will be born alive. If the age based on the mother's record is 35 weeks, for example, and the age determined from X-ray measurements is only 25 weeks, it indicates that the child is dead.

Physicians have used other methods of determining these important facts about mothers and unborn babies, but the X-ray methods are more and more in demand, Dr. Hodges pointed out.

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MEDICINE

Tuberculosis Methods May Be Useful With Arthritis

SOME of the methods used in treating tuberculosis may in future be applied to treating arthritis, although the two diseases are not related, Dr. Robert M. Stecher of Western Reserve University told the meeting. He showed photographs and X-ray pictures of dozens of pairs of hands afflicted with various types of arthritis.

This exhibit looked like a fortune-teller's nightmare, except that the pictures show the backs instead of the palms of the hands. The photographs show the swellings, deformities, and crippling of the hands and the X-ray pictures show the underlying destruction of bones and joints. Some of the hands were crippled and painful and the bones roughened and worn away by infections, among them gonorrhea.

In these infectious conditions, fever treatment by the Kettering machine for inducing very high temperature in the patient is helpful.

In another type of arthritis the cause is not so well known. In these cases, Dr. Stecher pointed out, the patient is sick and not merely having trouble with his hands, though his general sickness is not always considered in treating his arthritis. For such patients Dr. Stecher believes the treatment should be modelled after methods used in tuberculosis. The patient should be put to bed, given plenty of food and sunshine. It might help him to be sent west where the climate is dry and even. Too often, these patients insist on going to work and carrying on as many activities as their painful or crippled joints will allow.

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GENERAL SCIENCE

Scientific Methods Essential To Solution of Problems

THE future of mankind depends on man's learning to use the method the scientist uses in solving his problems.

This was the message of physics to medical X-ray science as conveyed by Prof. Robert A. Millikan, California Institute of Technology head and noted cosmic ray investigator, to the meeting of the American Roentgen Ray Society.

"Man must learn the scientific mode of approach before he will ever solve the worst of his social or governmental ills," Prof. Millikan declared.

The method of science, Prof. Millikan explained, is always to utilize the knowledge of the past as a platform from which to make advances into the future. In every single case the scientist starts with the accumulated knowledge of the past and pushes a little further along, and then from this slightly advanced platform builds still a little further, and so on and on, always pushing ahead from the last platform of all past knowledge.

Prof. Millikan sketched briefly the way in which this scientific method of approach was used in exploring the field of electromagnetic radiation from X-rays and ultraviolet rays to cosmic rays. The knowledge gained in this field is of tremendous importance and usefulness, but the method by which it was gained is even more important, Prof. Millikan emphasized.

He declared that this scientific method of approach is "vastly more important for the future of the race than any particular bread-and-butter application in the whole field of radiation, no matter how important that field as shown by the fact that enormous industries—the whole communications industry and sound pictures, for example—have come out of it."

Prof. Millikan surveyed the field of radiation and described the ranges of particular interest to medical men. Among these is the whole range of X-ray and gamma ray frequency, the main use of which is "combating mankind's most terrible scourge, cancer." This runs from a frequency in electron volts of about 12,000 up to 1,200,000 electron volts, which is the highest frequency which has been generated by an X-ray tube and used continuously for cancer treatment.

These high potential X-rays are particularly appropriate for deep-seated cancers, Prof. Millikan reminded the doctors, the low potential tubes being successfully used to treat superficial cancers.

"It is not too much to say," Prof. Millikan continued, "that the best of medical authorities agree that radiation is the most potent agent we now have for combatting the scourge of cancer, not even excepting surgery."

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ROENTGENOLOGY

Doctors Warned of Danger In Use of Diagnosis Aid

POSSIBLE danger in the use of thorotrast, a radioactive substance, in diagnosis was pointed out by Dr. Robert B. Taft of Charleston, S. C. Thorotrast is injected to make visible on X-ray pictures parts of the body that could not otherwise be seen and thus helps the physician detect disease conditions. Because its radioactivity is slight it is considered harmless to the patient and so far no adverse effects have been reported.

Dr. Taft devised a method of determining the radioactivity of one dose of thorotrast in the patient's body and found it gives off gamma rays equivalent to 1.37 micrograms of radium. Small as this may seem, it is the amount found in the bodies of the girls who died of radium poisoning contracted when they painted radium on watch dials. Dr. Taft, in making his preliminary report, said he expected to continue his studies but he feels the evidence already obtained shows that those who use thorotrast are on "dangerous ground."

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ROENTGENOLOGY

New Type X-Ray Camera For Analysis of Movement

FIRST use in the United States of a new kind of X-ray camera called the kymograph was reported by Drs. Wendell G. Scott and Sherwood Moore of