MEDICINE

Two-Headed Babies

One case prior to the Indiana baby is known of a human with two heads surviving. These fused twins, born in 1937 in Russia, lived for over a year and began to "goo-goo."

➤ AT LEAST one case of survival for a year of a human baby born with two heads, like the one in Indiana, is known to medical science. That "rare being," like the Indiana one, had two heads and four arms. It also had four shoulders and was fused from there down into one body.

These fused, or coalescent, twins were born in a maternity hospital in Moscow, USSR, in 1937. The two-headed baby girl was extensively studied at the All-Union Institute of Experimental Medicine there. The babies, named Ira and Galya, were one year, 22 days old when they died.

Scientists observed that at an early age they stared fixedly at each other and, evidently to get better acquainted, one would reach out to feel the face of the other. If the touch involved scratching with sharp finger-nails, as it sometimes did, a loud cry of pain resounded throughout the ward, first from the scratched twin, then from the scratcher. But then in a minute the wrangle ended and the sisters sucked their fingers peacefully.

After a time such conflicts became rare and the sisters seemed to have reached an understanding. Soviet scientists believed that, since the sisters shared a common chest, crying by one was most unpleasant for the other. Each girl, perhaps through a conditioned reflex as the Soviet scientists theorized, learned to restrain all movements that caused her discomfort even though it would come through her sister.

Before the end of their short lives, the babies were able to hold up their heads well and to wave their tiny hands and hold toys firmly.

Because of the small size of their legs, their doctors did not think they would ever walk, though prolonged special training for walking had been planned for them at an older age.

Shortly before they died at the age of one year, they began to utter sounds comparable to the "goo-goo" of a six-month-old infant. This showed that their speech function was very much retarded, although the development of their nervous reactions suggested that they would have talked if they had lived longer.

The character of their nervous activity was distinctly individualized and they had "temperament." Ira was vociferous, energetic and strong, while Galya was a great deal quieter, somewhat dull and feeble. She rarely smiled and cried a good deal.

The Soviet scientists apparently had not thought of trying to separate the babies. They were given great care and were observed, but not experimented on, the object being to learn as much as possible about the physiology of sleep, appetite, pain and certain diseases without risking the health or comfort of the twins.

In spite of "trials and tribulations," a frail constitution and many ailments, the twins gained and a few days before their death, the scientists felt every assurance that they would survive.

In the 15 years since these twins died, medicine and surgery have made great strides which may give the Indiana boy fused twins a better chance for the future.

A two-headed baby girl born in England in 1946 lived only 50 hours. In that short time, doctors found the two heads breathed independently and had different pulse rates, indicating two sets of lungs. Because the two heads fed separately, the doctors believed this being had two stomachs.

Another two-headed baby, with a third arm on the midline of its body, and two hearts and two stomachs, was reported from Detroit in 1930. This baby died at birth.

Cats with two heads and seven legs, calves with two heads, calves and deer with two hind ends, a big two-headed trout, two-headed turtles and snakes, double or triple chick embryos on one yolk and two-headed or four-legged chickens have also been reported.

All these double monsters, as well as identical twins, originate from one single egg. In most cases what happens is that the single egg forms two separate centers of organization in close proximity to each other. But when these begin to expand and differentiate, they fuse instead of continuing as separately organized individuals, such as identical twins.

Fused twins may be loosely conjoined, as Siamese twins, or they may be joined in many odd ways, it appears from medical reports. One of these odd fusions gave a monster four legs and four arms but a fused chest and two heads fused so that each face was made up of two halves. One half belonged to one trunk and the other half face to the other trunk.

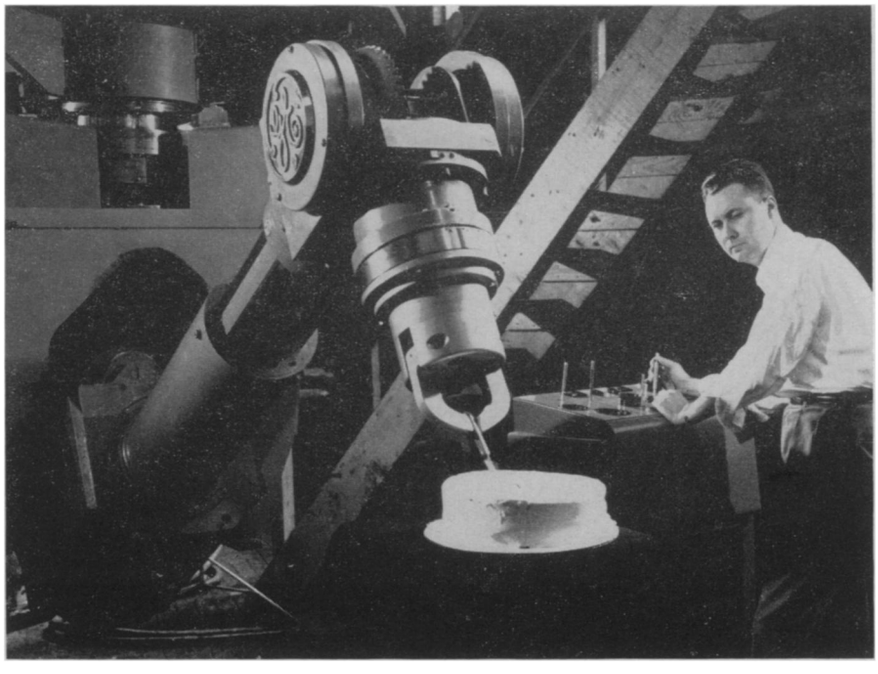
Science News Letter, December 26, 1953

TECHNOLOGY

Robot Arm Can Make Cake

➤ A 15-TON mechanical arm that can make cakes, tie iron bars into knots and pour glasses of water has been created to perform Herculean tasks where men could not survive.

Despite its culinary prowess, the crane-mounted O-Man, will draw upon its mighty strength in the General Electric laboratory at Schenectady, N. Y., where nuclear aircraft engines are under study for the Air



JUST A SMALL PIECE, PLEASE—This is the mighty-muscled O-Man, the newest mechanical arm designed to handle radioactive materials in areas dangerous to man. It is sensitive enough to slice this cake.

Force and Atomic Energy Commission. O-Man, the big arm's name, is derived from "overhead manipulator."

With its two steel fingers, the record-sized machine can pick up heavy parts, position them and fasten them into place. It can drill and tap holes, use power wrenches, hammers or riveters, and operate a sheet metal saw. Messages are dispatched to the arm through 140 wires running to a remote "brain" situated where human arms are safe from radioactive burns.

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• RADIO

Saturday, Jan. 2, 1954, 3:15-3:30 p.m. EST

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. George Wald, professor of biology at Harvard University and winner of the 1953 Lasker Award of the American Public Health Association, will discuss "How We See."

HEMATOLOGY

New Blood Factor U Widely Distributed

➤ DISCOVERY OF a new blood factor, called "U" because of its almost universal distribution, was announced by Dr. A. S. Wiener, Dr. L. J. Unger and E. B. Gordon of the Serological Laboratory of the Office of the Chief Medical Examiner of New York and the blood and plasma bank, University Hospital (New York University-Bellevue Medical Center), New York, in the *Journal of the American Medical Association* (Dec. 19).

The new factor was discovered after a Negro woman, taken to a hospital with a bleeding stomach ulcer, went into shock and died from reaction to blood being given her by transfusion. A previous transfusion given her had had to be stopped because of a reaction of chills and fever. Both donors, however, had belonged to the same blood group, B, as the patient.

After she died, her blood was again examined. Cross-matching tests showed that her blood contained an abnormal antibody that strongly clumped the cells of the two donors. Subsequent tests with blood of 425 Negroes and 690 white persons showed the U factor present in all but four of the Negroes.

The U factor, the scientists report, is not related to the A-B-O, M-N, Rh-Hr or K-k systems, or to any other blood factor discovered to date.

Blood grouping has become a highly specialized field, the scientists point out. In their opinion, the delicate tests needed can only be performed by specially trained persons. In order to avoid fatal reactions, they advise against having blood grouping and cross-matching done by interns who usually have very little training. Instead, they think, large hospitals should set up adequate blood grouping departments and small hospitals should make use of a central blood grouping laboratory.

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METEOROLOGY

Weather Control Studied

➤ WHETHER CONGRESS should enact laws to control the weather, if it is economically possible at all to make rain or to disperse fog, is one of the questions an 11-man committee just appointed to study weather modification will probably decide.

Retired Navy Capt. Howard T. Orville, chairman of the President's Committee on Weather Control and Evaluation and a consultant of the Bendix Aviation Corp., Baltimore, outlined the aims of the committee in Washington.

Western ranchers and farmers are spending hundreds of thousands of dollars a year on efforts to make it rain. Although many of them believe this money is well spent, the U. S. Weather Bureau, backed by close to 100 years of records, often can tell them that it would have rained without the rain maker's efforts. Capt. Orville pointed out, however, that an increase of even ten percent in rainfall in the West would "mean a great deal." Many scientists at present question whether cloud seeding achieves even this. The weather advisory committee, Dr. Orville said, will make a study of "all past, present and future cloud seeding experiments," then try to decide if they have been successful. In their work, the committee will have access to classified information, both of the government and of private operators, since it has the power to subpoena records. Thus it will be able to base its final decision recommending weather control legislation, due in 1956, on more scientific data than has been available to previous groups evaluating the claimed successes of rain making.

Under the terms of the Public Law 256, passed by Congress at its last session, the committee is required to report periodically to Congress, by way of the President. Not only information on cloud seeding collected by U. S. scientists, but results of experiments in such countries as Australia and Spain will be considered by the committee.

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BIOPHYSICS

Photosynthesis Method

➤ GREEN PLANTS may use a photoelectric process for the "crucial step" of converting energy to make sugars and starches for food from carbon dioxide and water.

This new theory, which will appeal to scientists working on the problem because it is both simple and profound, has been developed by Dr. Leonard S. Levitt of Stevens Institute of Technology, Hoboken, N. J.

According to this theory, a chlorophyll molecule, on bombardment with photons of red light, absorbs one quantum. This results in activation of an electron to such a high-energy level that it is easily extracted by a mild oxidizing agent intimately associated with the chlorophyll molecule, that is, the disulfide group of pyruvic oxidase.

The entire process, Dr. Levitt thinks, may be thought of as a flow of electrons actuated by light, or, essentially, as a photoelectric current flowing from water through the chlorophyll to the disulfide.

According to previous theories advanced by other scientists, the chlorophyll molecule transfers its electromagnetic energy to a disulfide ring and, through chemical reaction, two hydrogen atoms are extracted from water or some other substance.

Dr. Levitt thinks it "rather unlikely" that this would go on in a living cell in a water solution or suspension where ions could be formed with much less energy.

In reporting his theory in *Science* (Dec. 4), he states: "The transfer of electrons can occur much more rapidly and efficiently than the transfer of relatively cumbersome hydrogen atoms, and it is not to be supposed that nature has not yet been apprised of the fact."

According to his theory, many things scientists have been searching for, because they assumed they happen, need not be searched for because they do not happen.

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PUBLIC HEALTH

Milk, Living Standards Are Closely Connected

➤ THERE IS a close connection between a high standard of living in a country and its ability to produce and distribute wholesome milk, Dr. Jacques M. May, head of the department of medical geography, American Geographical Society, declared at the World Congress for Milk Utilization meeting in Washington.

Where milk is unobtainable or prejudices keep people from drinking it, the population is usually near starvation, he said.

In India, the people like milk and the country has the largest number of cattle in the world, but only a quarter of a pint of milk is available per person per day. It is against religion in India to kill cows. Old cows no longer producing milk compete for food with young cows. The result is the cows are as starved as the people.

A contempt for milk is traditional in China, Dr. May said.

Science News Letter, December 26, 1953