ASTRONOMY

Planets Made of Dust Cloud Plowed by Sun

➤ BEFORE THE earth and the other planets of our solar system were formed, the sun plowed through a gigantic cloud of gas and dust.

This theory was suggested at the National Academy of Sciences meeting in Washington by Dr. Harold C. Urey of the University of Chicago. It is, he said, the best solution yet to explain the amounts of various elements found in the planets and meteorites, starting from the "cosmic abundance."

The "cosmic abundance," Dr. Urey explained, is the relative abundance of all elements in the universe, hydrogen and helium making up all but a small fraction.

The collision of the sun with the gas cloud would have to have been off to one side rather than straight through, in order to allow gases and other volatile materials to escape from such a pre-solar system.

The planets were then formed after the sun had passed through this large gas and dust cloud, picking up material, some of which Dr. Urey suggests was larger than has previously been proposed, as it plowed through. Such a theory is known to astronomers as "accretion." It is opposed by Russian astronomers.

Dr. Urey's model is based on tests on the chemical and physical structure of meteorites. Minerals may be more effective than previously thought in the clumping together of interstellar material. Crystalline asbestos, which has a long crystal, might furnish a better surface for cosmic dust to stick to than a sphere.

Science News Letter, May 8, 1954

PSYCHOLOGY

Consideration Important In Air Crew Commander

➤ IN THE important first 10 days after a B-29 bomber crew is assembled for training, the consideration of the aircraft commander for his men, and his competence as a leader, are both very important in developing friendly attitudes of the crew toward each other and willingness on the part of the men to go into combat.

Drs. John K. Hemphill and Charlotte A. Christner of Ohio State University found that the commander should impress his men with his friendship, trust in them, respect and warmth. He should also make plain to them the relation between himself and the crew, and should establish clear-cut patterns of organization and channels of communication.

They reported details of their study to the Midwestern Psychological Association meeting in Columbus, Ohio.

The ability of the leader of a small bomber crew to perform a specific task has very little importance in determining the success of the crew in performing the same task, Dr. Kermit J. Rohde of Ohio State University told the same meeting.

On the other hand, the task ability of the most qualified and also the least qualified member of the crew is very important to the crew's success.

The crews studied by Dr. Rohde were made up in various ways to combine a leader with task ability with unqualified crew members or some combination of qualified and unqualified men, and also a leader who could not do the job himself with similar groups of qualified and unqualified crew members.

Differing conditions of motivation and prestige do not alter the relative importance of crew members' and leader's competence at the task.

Informal conferences of crew members are more important in improving the morale and attitudes of the crew when the discussions are led by the aircraft commander than when a psychologist conducts the meetings, the psychologists learned from Dr. Bernard I. Levy of Randolph Air Force Base, Texas.

Topics for the discussion conferences were in each case chosen by crew members.

Science News Letter, May 8, 1954

PUBLIC HEALTH

Lung Cancer Called Wide Epidemic Disease

➤ LUNG CANCER has increased so much in recent years that today it can "fairly" be said it "exists as a pandemic disease in North America and in the industrialized countries of Northwest Europe," a government scientist declared in Chicago.

Pandemic means widely epidemic. The influenza epidemic of 1918 was a pandemic.

The increase in lung cancer is real and not due entirely to better diagnosis and reporting, Dr. Harold F. Dorn, chief of the office of biometry at the National Institutes of Health, Bethesda, Md., told the Industrial Medical Association meeting in Chicago.

His reasons: "The mortality rate for white males, adjusted for changes in age distribution, increased 25 times between 1914 and 1950. If all of this increase is due solely to better diagnosis, physicians practicing 36 years ago were able to diagnose correctly only four percent of the cases existing at that time. With all due credit to advances in medical knowledge during the past third of a century, this conclusion hardly seems warranted.

"The relative increase has been four times greater for males than for females. Even if we assume that all of the recorded increase in lung cancer among females is due to improved diagnosis as well as an equivalent portion of the increase among males, there still remains an 18-fold rise in mortality for males.

"It does not seem reasonable to believe that physicians are able to diagnose lung cancer more easily in one sex than in the other."

Science News Letter, May 8, 1954

IN SCIEN

PHYSICS

Reveal Rate of Plutonium Fission

➤ THE RATE at which plutonium, well-known for the fissioning that makes it an atom bomb ingredient, splits up is revealed for the first time in the *Physical Review* (April 1).

The plutonium fission rate was determined about ten years ago, but has just been declassified. In one gram of plutonium 240, 1,600,000 atoms fly apart every hour.

The three scientists reporting the fission rate are Drs. E. Segré and O. Chamberlain of the University of California, and Dr. G. W. Farwell, now at the University of Washington, Seattle. The work was done at Los Alamos Scientific Laboratory.

Dr. Segré was one of the California group that produced the first artificial plutonium, which does not occur in nature except for minute traces found in radioactive ores. The atomic bomb dropped on Nagasaki in World War II was a plutonium bomb.

In another article in the same issue of the *Physical Review*, Dr. Segré and Dr. Clyde Weigand, also of the University of California, announce that the products found when plutonium 240 has fissioned spontaneously have the same energy range as those from the splitting of plutonium 239, induced by bombardment with slow neutrons.

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PSYCHOLOGY

Errors Small in Radar Predictions of Collisions

➤ THE MAN in the airport control tower watching on radar the tracks made by two approaching airplanes can tell pretty well whether or not they are likely to collide in mid air.

A study of the errors made in radar watching, using simulated tracks of make-believe airplanes, was reported to the Midwestern Psychological Association meeting in Columbus, Ohio, by Drs. J. E. Mangelsdorf, A. J. Slivinske and P. M. Fitts of Ohio State University. Their study was part of a program of research on radar sponsored by the U. S. Air Force.

Constant errors were found to be negligible. For radar trails representing speeds of 180 to 300 knots and for a distance of 24 nautical miles, there was a variable error of about eight percent of the distance. The errors were also found to be related to the speeds at which the simulated aircraft were "flying."

Taking part in the test were six experienced radar men. They made 5,760 separate judgments.

Science News Letter, May 8, 1954

CE FIELDS

NUTRITION

Chicken Taste Is in Meat Not in Fat and Bones

➤ CHICKEN FLAVOR is concentrated in the meat, not in the fat or bones as is popularly supposed.

Broth made from meat alone received a much higher "flavor score" from a taste panel of eight judges than bones, fat, skin, or a composite of these elements. Fat had the lowest score. Factors controlling broth flavor also affect meat flavor.

Tests to determine the source of chicken flavor were made by Eldon L. Pippen, Agnes A. Campbell and Iva V. Streeter at the U. S. Department of Agriculture Western Utilization Research laboratory, Albany, Calif. Their results parallel earlier studies on beef. In 1948, E. C. Crocker reported that bones, fat and juices were relatively unimportant in beef flavor.

The broth was made by boiling the chicken parts for three hours in unseasoned water. The failure of fat to contribute to flavor was established by freeze-drying meat and then extracting all the fat. Broth made from this fat-free meat was compared with broth from meat with its normal amount of fat added. No significant taste difference was noted.

Further tests were made by extracting flavor from meat with cold water. The chicken meat was covered with water, and later the water was squeezed from the meat. Broth made from meat after this extraction had little flavor. When the extract was added to the broth, the flavor returned.

The experimenters made no attempt to separate white and dark meat for the tests. With tests made for chicken odor in the broth, the fat became important. Chicken aroma was greater in broth made with some fat added than with the non-fat parts of the chicken.

Science News Letter, May 8, 1954

ARCHAEOLOGY

Unearth Evidence of Greek Alphabet Origin

➤ CLUES TO the origin of the Greek alphabet have come from the littered basements of three ruined private homes in which Mycenaean people lived in the 13th century B.C.

There is also now evidence that ordinary citizens of that long ago time were able to write and used writing in their daily life.

The evidence was reported to the American Philosophical Association meeting in Philadelphia by Dr. Alan J. B. Wace, member of the Institute for Advanced Study, Princeton, N. J., and emeritus professor of classical archaeology at Cambridge University, England.

In the debris dumped into the basements of the houses when they tumbled down were found clay tablets with inscriptions on them in a language known to archaeologists as "Linear B Mycenaean Script." These have been deciphered as Greek and show definitely that the Mycenaeans were Greeks. They also show that the ordinary citizens as well as officials were able to read and write.

Other objects found indicate something of how these people lived before the time of Homer. A great number of carved ivory plaques and inlays show how they decorated such everyday objects as beds, chairs, chests and the like. A storeroom was found with a large stock of dishes sorted out with domestic vessels on one side and drinking cups and bowls on another.

Science News Letter, May 8, 1954

AERONAUTICS

Japan Gets U. S. Trainers For Air Defense Program

➤ TWO T-34 military trainers for pilots have been delivered to Japan to strengthen her National Safety Forces, which are a part of a defense alliance of the free world designed to operate in the critical Far-East area.

The Beech Aircraft Corporation, builder of the T-34 Mentor, said more of the trainers will be sent in the future. Japan will augment the American-made planes with trainers of the same design built under license by Japanese manufacturers.

The airplane company also reported that the Canadian government has been authorized to assign production of the Beechcraft T-34 Mentor to a Canadian manufacturer.

Science News Letter, May 8, 1954

ZOOLOGY

Shrimp Family Thrives In Desert Sea of Sand

➤ FOR 200,000,000 years a shrimp family has thrived in the most unlikely spot imaginable—the blazing desert.

Members of the inedible shrimp family, *Apus,* millions of years ago evolved a hard shell that protects the eggs from heat or cold until a rare rain comes. When water collects in a natural basin, the eggs buried in the dried mud there hatch in 24 hours.

The eggs can stand up to two years of no moisture. Once hatched, the shrimp live a very active but short life. Within two weeks they are mature and the life span limit is 40 days.

When they do reach adulthood in the short-lived desert pools, most of the desert shrimp are likely to be female. There are species of this family in which no males have been observed by scientists. Reproduction is carried on largely by parthenogenesis, a process by which eggs are stimulated to develop without fertilization.

Science News Letter, May 8, 1954

MEDICINE

Chemical Change to Cancer May Come Fast

➤ IF A chemical on the skin or in the body is going to change normal cells to cancer, it can do it pretty fast.

This appears from studies reported by Dr. Paul Weiss and Miss Ruth James of the University of Chicago at the meeting of the National Academy of Sciences in Washington.

They were not producing experimental cancers, but they were studying the effect of a chemical on cell growth pattern. The chemical they used was vitamin A and the cells were from chicken skins.

Brief exposure to the vitamin, they found, completely changed the growth pattern of these cells. Previously British workers had shown that chicken skin tissues grown in a medium containing excess vitamin A failed to develop properly.

The normal scaly structure of the skin did not appear, and the horny substance, called keratin, which exists in normal skin cells was not produced.

The Chicago scientists found that a brief exposure of only half an hour caused the cells to develop entirely different and abnormal structures. The research was conducted on funds from the American Cancer Society.

Science News Letter, May 8, 1954

GENERAL SCIENCE

Use Interlingua for Summaries in Journal

➤ BEGINNING WITH its issue of April, 1954, the *Journal of Dental Medicine* will carry summaries of its articles in Interlingua. The journal, official organ of The American Academy of Dental Medicine, is edited by Dr. Irving Yudkoff, New York.

Interlingua is understood at sight by any one trained to read technical material in one of the major languages of the Western world. It consists of elements shared by numerous languages and serves to break down the language barrier in international communication, especially in the field of scientific research.

Its practical application is one of the service ventures promoted by SCIENCE SERVICE.

The objectives of the American Academy of Dental Medicine as formulated in its constitution and translated into Interlingua are "le promotion de studios e le dissemination de cognoscentias del causa, prevention, e controlo de morbos del dentes, de lor substructuras e adnexos, e de problemas affin; e le supporto e promotion de un melior comprension scientific inter le campos de dentisteria e medicina."

Just as practically any dentist anywhere in the world can read this Interlingua passage, so he will henceforth be able by means of Interlingua summaries to follow and profit from the dental advances reported in the *Journal of Dental Medicine.*

Science News Letter, May 8, 1954