

GENERAL SCIENCE

Carnegie Researches

Annual report tells of new hybrid grasses being developed, the earliest known cactus, early human embryo specimens and a frog without a tadpole stage.

➤ **UNTAMED** native grasses of western rangelands, stand-by of the live-stock industry since the first wild-eyed longhorns were driven in by pioneer ranchers, are scheduled to give place to new, man-made varieties with deeper, tougher roots and more nutritious stalks and leaves, it is disclosed in the annual report of the Carnegie Institution of Washington, presented to the trustees by Dr. Vannevar Bush, president.

Qualities sought for in the new hybrid grasses now under test, and even newer hybrids that have been planned but not yet actually bred, are greater resistance to drought, stronger soil-binding abilities against erosion, and greater value as hay and pasture. The breeding method used is known as the induction of amphiploidy, which means the crossing of rather remotely related species in such a way that the offspring receive whole sets of the heredity-bearing chromosomes from each parent instead of only half-sets as is usually the case. This brings about combinations of both parents' desirable qualities, and also the lusty habit of growth known as hybrid vigor.

Thus far, races of bluegrass have been employed in the breeding work. Next year this work will be extended, and species of wheat grass will also be included.

The program is a cooperative one between the Carnegie Institution and the U. S. Soil Conservation Service. Carnegie geneticists under the direction of Dr. H. A. Spoehr are doing the plant breeding work, and the Soil Conservation Service research men will then plant the new varieties in the field for performance tests.

Science News Letter, December 18, 1943

Earliest Known Cactus

➤ **DESCRIBED** in the report is a fossil of the earliest known cactus. It dates back into the first part of the Age of Mammals, or Eocene period, 50 million years or so ago. Before this fossil was identified as a cactus it had been thought that the cactus family had a much short-

er ancestry than is now indicated. The fossil has been given the generic name *Eopuntia*, or dawn cactus, by Dr. Ralph Chaney.

Finding the fossil of a fleshy-jointed plant like a cactus is a great rarity, it is pointed out. Most plant fossils are either petrifications of hard, woody parts or the imprints of leaves that fell into mud and were covered up by new layers of silt. For this reason, fossils of swamp and pond plants are common but those of desert plants extremely few.

Science News Letter, December 18, 1943

Very Early Human Embryos

➤ **HUMAN EMBRYOS** in their eighth, tenth and nineteenth days from conception have been added to the small but slowly growing group of specimens available for the study of the pre-birth life of our own species, Dr. George W. Corner reports. The two earlier-stage specimens, which were studied by Dr. A. T. Hertig and Dr. John Rock, are in the Carnegie Institution collection. The 19-day one is at the University of North Carolina, in the possession of Dr. W. C. George.

Science News Letter, December 18, 1943

Tadpole-less Frog Species

➤ **AN EXTRAORDINARY** developmental history farther down the scale of animal life is also described: a species of frog in Jamaica, that bypasses the tadpole stage, emerging from the egg as a tiny but fully developed, four-legged frog. This curious animal lives among the rocks on mountain heights where there are no ponds for tadpoles to swim in, so it just about has to get along without the more usual type of frog infancy. Dr. W. Gardner Lynn has made a study of this remarkable animal.

Science News Letter, December 18, 1943

War Hinders Archaeology

➤ **EXCAVATIONS** and restorations in the great Maya region in Central America, one of the most characteristic of

Carnegie Institution activities, have been interrupted by the war, and no resumption is expected until peace returns, Dr. A. V. Kidder states. Many of the archaeologists and anthropologists are now engaged in war work where thorough and accurate knowledge of the peoples of tropical war areas is required.

In one area only, Guatemala, has any actual digging been possible. Finds made by private individuals there have also been investigated. Most notable among the latter was a cache containing ceremonial vessels and a gold plaque.

Science News Letter, December 18, 1943

Stars or Planets?

➤ **INVESTIGATING** the physical characteristics of the small companion in the compound star known as 61 Cygni, Dr. Henry Norris Russell, research associate at Princeton University, found that the probable size of the body ranged from about the same as that of Saturn to a body with a radius approximately ten times that of the sun—that is, it might be of either planet size or sun size.

The surface temperature of this body, which has a mass about 16 times that of the planet Jupiter, Dr. Russell estimated to be too low to be self-luminous. Shining by reflected light, it would be much brighter than Saturn without its ring, but the planet would still be too faint to be seen from the earth.

Considering not only the invisible companion of 61 Cygni, but also the newly-reported companions to the stars catalogued as Cincinnati 1244 and 70 Ophiuchi, Dr. Russell concluded that the internal constitution of these three bodies is probably more like that of a star than it is like any of our planets. Since these three small celestial bodies, the only ones outside our solar system known to have masses less than one-tenth that of the sun, can at most shine only feebly by their own light, Dr. Russell argued that they shine mainly by reflected light and can rightly be called "planets."

Science News Letter, December 18, 1943

Star-Obscuring Polar Cap

➤ **ASTRONOMERS** have frequently noticed that something was dimming the true brilliance of the stars near the north pole. Instead of being in our own atmosphere, this cloud exists in space, between us and the stars. Investigations

conducted by Dr. Frederick H. Seares of Mount Wilson Observatory with the assistance of Miss Mary C. Joyner, showed that this cloud which obscures the polar stars is 20 degrees in diameter. Our own solar system is close to, if not actually a little within, this obscuring matter.

Science News Letter, December 18, 1943

Light From New Stars

► BETTER to understand the luminosities of "new stars" and their evolution, a study of the expanding shells of some

of the nearer novae was made by Dr. Walter Baade, partly in cooperation with Dr. Milton L. Humason. Comparing a photograph of the "new star," R. Aquarii, taken this year with one made in 1921, Dr. Baade discovered that the outer shell of gas is expanding.

The line of a previously unrecognized element in the sun was identified as neutral gold, through the work of Drs. Arthur S. King and Charlotte Moore Sitterly. Dr. Harold Babcock and Mrs. Mary F. Coffen supported this evidence by observing that the gold line is strengthened in sunspot spectra.

Science News Letter, December 18, 1943

was retired last spring, has been appointed executive officer of the informational service of the division of medical sciences of the National Research Council, Prof. Ross G. Harrison, chairman of the Council, has announced.

The informational service has been established under a recent grant of the Johnson and Johnson Research Foundation of \$75,000 for the period ending June 30, 1945. The purpose of the grant is to enable the Council to assemble and disseminate as far as possible, medical information pertaining to the war effort. (See SNL, Oct. 23)

Science News Letter, December 18, 1943

DENTISTRY

Fluoride Reduces Caries

Tests prove that a two per cent solution of sodium fluoride is about 40 per cent effective in reducing the amount of dental decay in a group of school children.

► PUTTING a 2% solution of sodium fluoride on the teeth of a group of school children reduced by about 40% the amount of caries, or decay, in the teeth of these children during the following year. Dr. John W. Knutson, U. S. Public Health Service dental surgeon, and Prof. Wallace D. Armstrong, of the University of Minnesota, report in *Public Health Reports* (Nov. 19), official publication of the federal health service.

Fluorides in drinking water, it was discovered some years ago, will, if present in high enough concentration, cause the ugly tooth condition of mottled enamel. Lesser amounts of fluorides in the water, though failing to cause mottled enamel, apparently protect the teeth against decay.

Efforts to use fluorides locally instead of through the drinking water to control tooth decay have previously been made by other investigators on small groups of children, with apparently some success.

The group treated under the direction of Dr. Knutson and Prof. Armstrong numbered 289. Their teeth were compared at the end of the year following treatment with those of a control group of 326 children in the same schools. Before the treatment, children of both groups had been suffering about the same amount of tooth decay.

Only the teeth in the upper and lower left quadrants of the mouth were treated. There were 39.8% fewer new

carious teeth in the treated than in the untreated teeth at the end of one year. The treatment did not, however, prevent decay from attacking undecayed surfaces of teeth previously attacked by decay. In other words, about 40% of teeth that had no decay or cavities were protected from caries, but teeth that already had cavities or decay spots were not protected. If this is borne out by further studies, it means that the fluoride treatment can prevent decay but not arrest it once it has started. In that case, it probably is a more effective preventive than the 40% figure indicates, because undoubtedly, the scientists point out, some of the new caries developing in the treated teeth had started before treatment but was not far enough along to be detected when the teeth were examined before treatment was started.

The 2% solution of sodium fluoride used is highly poisonous and must be used and guarded with extreme caution, the scientists warn. Whether this is the weakest effective solution and whether eight treatments, the least number given in the study, are more than needed are among questions to be answered by further studies.

Science News Letter, December 18, 1943

MEDICINE

Former Surgeon General Heads Information Bureau

► MAJ. GEN. James Carre Magee, former surgeon general of the Army who

SCIENCE NEWS LETTER

Vol. 44 DECEMBER 18, 1943 No. 25

The weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C. North 2255. Edited by WATSON DAVIS.

Subscriptions—\$5.00 a year; two years, \$8.00; 15 cents a copy. Back numbers more than six months old, if still available, 25 cents.

Copyright, 1943, by Science Service, Inc. Reproduction of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service.

Entered as second class matter at the post-office at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices, Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and in the Engineering Index.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation, Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., PEnnsylvania 6-5566; and 360 N. Michigan Ave., Chicago, STate 4439.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Henry B. Ward, University of Illinois; Edwin G. Conklin, American Philosophical Society; J. McKeen Cattell, Editor, Science. Nominated by the National Academy of Sciences: R. A. Millikan, California Institute of Technology; Harlow Shapley, Harvard College Observatory; W. H. Lewis, Wistar Institute. Nominated by the National Research Council: Ross G. Harrison, Yale University; C. G. Abbot, Secretary, Smithsonian Institution; Hugh S. Taylor, Princeton University. Nominated by the Journalistic Profession: O. W. Riegel, Washington and Lee School of Journalism; A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Executive Editor, Sun Papers. Nominated by the E. W. Scripps Estate: Frank R. Ford, Evansville Press; Warren S. Thompson, Miami University, Oxford, Ohio; Harry L. Smithton, Cincinnati, Ohio.

Officers—Honorary President: William E. Ritter. President: Edwin G. Conklin. Vice President and Chairman of Executive Committee: Harlow Shapley. Treasurer: O. W. Riegel. Secretary: Watson Davis.

Staff—Director: Watson Davis. Writers: Frank Thone, Jane Stafford, Marjorie Van de Water, Morton Mott-Smith, A. C. Monahan, Martha G. Morrow. Librarian: Jerome Harris. Science Clubs of America: Joseph H. Kraus, Margaret E. Patterson. Photography: Fremont Davis. Sales and Advertising: Hallie Jenkins. Business Manager: Columbus S. Barber.