SCIENCE NEWS

Science Service, Washington, D. C.

PERMANENCE AND PERSISTENCE OF GENES IN THE FRUIT-FLY

THREE hundred successive generations of descendants of one individual have been reared during the past fifteen years in the laboratories of the Johns Hopkins University. This constitutes the longest single breeding experiment ever carried out, so far as known, according to Professor Raymond Pearl, the Johns Hopkins biologist, who made a report before a recent meeting of the Washington Academy of Sciences. Translated into terms of human generations, it would carry us back to 7,000 B.C., at the dimmest twilight beginnings of the Bronze Age and before the dawn of history.

Crowding 300 generations of a living organism into half a human generation of time was made possible by the use of the little gnat-sized insect *Drosophila*, known variously as fruit-fly and yeast-fly. Its life-cycle can be completed in three weeks, instead of the human thirty years.

The experiment consisted in starting with a single normal male, mated to a female with vestigial wings. Normal males were selected from each hybrid generation, and always bred back to vestigial-winged mates. In the end, the "genes," or hereditary units determining normalcy in wings, were still there, striking evidence of the permanence and persistency of these factors in the reproductive process.

Professor Pearl then called attention to far longer persistence in hereditary patterns of other organisms in nature. Some of the lower forms of animal life have come down unchanged through geologic periods measured in tens of millions of years.

Yet for all this demonstration of potency on the part of the hereditary units, the speaker cautioned against too easy acceptance of doctrines ascribing all-importance to heredity as against environment in human affairs.

"The full implications of the reciprocally determinative influences of organism and environment seem to me to have been generally somewhat less than adequately valued in the last century's development of biological thought," he said, "and certainly an extremely inadequate amount of first-rate research has been put upon the matter."

Nor was he willing to subscribe to the doctrine that birth control, in limiting the reproduction of the "upper classes" while the poor continue to breed, is "ruining the race." Making it plain that he supports the idea of birth control, and especially that he believes in checking the increase of the hereditarily diseased, Professor Pearl said:

"It is assumed that generally speaking and with negligible exceptions the more fortunate social and economic classes are in that position because they are composed of not only mentally, morally and physically, but also genetically superior people. But it may be alleged with at least equal truth that these very people who are regarded as mentally, morally and physically superior are that way in no small part only because they and their forebears have been fortunate socially and economically.

"The analogy often drawn between human breeding and live stock breeding is in part specious and misleading. In animal breeding it has been learned that the only reliable measure of genetic superiority is the progeny test—the test of the quality of the offspring actually produced. Breeding in the light of this test may, and often does, lead to the rapid, sure and permanent improvement of a strain of live stock.

"But when the results of human breeding are interpreted in the light of the clear principles of the progeny test the eugenic case fares badly. The vast majority of the most superior people in the world's history have in fact been produced by mediocre or inferior forebears; and conversely the admittedly most superior folk have in the main been singularly unfortunate in their progeny.

"The arguments adduced by the crusading eugenists to get around these disconcerting facts, when freed of irrelevant and misleading details, reduce themselves to two categories—indignant denials of the clear and patent facts, and personal abuse of the opposition, in respect of both its intelligence and its integrity. But calling men fools and liars advances neither science nor humanity."

PROTECTION AGAINST MEASLES

WITH measles on the rampage and new cases being reported at the rate of over 30,000 a week, particular interest attaches to the latest reports on how the disease spreads and on results obtained with convalescent serum as a preventive measure.

Preventive serums have captured the popular fancy, perhaps because of their appearance of magic. A prick of a needle, a "shot in the arm," and presto! your body is endowed with a mysterious, invisible power that protects you against diphtheria or typhoid or some other dreaded malady.

In the case of measles, convalescent serum from the blood of recently recovered measles patients seems to give a fair measure of protection. Equally important, however, are less dramatic hygienic measures.

Measles spreads more rapidy in congested districts and in homes where the hygiene is poor, two New York City physicians, Drs. Samuel Karelitz and Bela Schick, the latter of diphtheria test fame, have just reported to the American Medical Association. They class as homes of good hygiene those in which the sick child is isolated from other children at an early stage of the disease.

A study was made by these physicians of 106 children who had been exposed to measles. All had been exposed to the disease for from two to five days. All were given convalescent serum in the same amounts. The serum gave no protection to the children who lived in homes where the hygiene was poor. It protected over half of the children in homes where good hygiene prevailed.

Eighty-three per cent. of children who were in hospitals were protected. Drs. Karelitz and Schick conclude that children coming from careless homes must be given much larger doses of measles convalescent serum if they are to escape the disease.

These child specialists also report that the degree and frequency of infection with measles, within a period of a few days, determines in large measure whether the disease will develop in susceptible children. In this respect, measles is like tuberculosis.

TREATMENT OF PNEUMONIA WITH OLIVE OIL

SUCCESS in treatment of pneumonia with olive oil has been announced by Drs. A. C. Frazer and V. G. Walsh, of St. Mary's Hospital Medical School, London.

The oil is emulsified and then injected into the veins. The high temperature of pneumonia patients dropped to normal within twenty-four hours after the oil injection and three weeks later the patients were well.

Patients suffering from septicaemia, commonly known as blood poisoning, and from erysipelas and acute rheumatism also improved after the olive oil treatment.

The emulsified olive oil injections also seem to prevent the reactions which frequently follow injection of vaccines, tuberculin and insulin, making possible the use of much larger doses of these substances.

The remarkable effect of the olive oil is considered due to absorption of the pneumonia or other germ's poison circulating in the blood. These poisons lose their potency after adhering to the fat globules of the oil.

Drs. Frazer and Walsh first conducted test-tube experiments with emulsified olive oil and the toxins of the diphtheria germ and tetanus or lockjaw. Then they investigated the effect of the olive oil on animals infected with these germs. Finally it was tried, with success, on patients.

THE RELATIVE INTELLIGENCE OF COWS AND HORSES

TEMPERAMENT differences and intelligence similarities between cows and horses have been tested at Cornell University, by Dr. L. Pearl Gardner, as part of a series of experiments on the nature of learning in man and animals. Cows not only learn as easily as horses, but remember better what they have learned. Among the six breeds of cows used in the tests, the best "milker" was also the best learner.

The learning problem for the cows and horses was to find breakfast when it was hidden in one of a row of three boxes under a black cloth. Altogether 41 cows were tested with 850 trials and 62 horses with 1,234 trials. The cows were timid and fearful. Many were so afraid that they preferred to go breakfastless rather than attack the strange thing. Although most of the horses pushed into the cloth during the first four trials, only about half the cows dared to do this. Yet when the scores were all in, it was found that both horses and cows had the same average of seven boxes opened before the correct one in 22 trials. Cows made mistakes in method of attack less frequently than horses, who often nudged the box that was already open.

Ten of the cows who had learned the problem were retested after a year during which they had had a vacation from the experimenting. Their retention for a year was much better than that of horses over a period of three to eight months.

PREHISTORIC "CRAB CULTURE" IN PUERTO RICO

PREHISTORIC Indians in Puerto Rico who ate so many crabs that masses of cast-off crab claws are their cultural trademark have been discovered by Froelich G. Rainey, of the Peabody Museum of Yale University. Mr. Rainey concludes that the crab eaters are the oldest known inhabitants of the island. Their painted pottery, stone tools and shell spoons were found buried in masses of crab claws.

In his report of the discovery to the National Academy of Sciences, Mr. Rainey states he found the new type of prehistoric culture while excavating a large kitchen midden near Ponce on the south coast of Puerto Rico. This refuse pile itself was typical of what well-known prehistoric Indians of the region threw into their trash. The mound consisted of oyster shells, clam, scallop and snail shells mixed with ashes and charcoal from fires, broken pottery and discarded implements. Trenching beneath this, the archeologist made his discovery of a new type of pottery, of far better fabrication than the crude ware of the shell-heap people. And with this red and white painted pottery were other clues to a distinctive and older type of life, all mixed in disintegrated crab claws.

At least two and possibly three cultural horizons can now be defined in Puerto Rico. The crab culture was followed by the well-known Arawak Indian culture, and that perhaps by a relatively recent phase to which he has discovered several clues. Extensive work in the island's interior, however, will be necessary if this late phase of Puerto Rico's aboriginal history is cleared up.

Mr. Rainey's excavations were part of the Scientific Survey of Puerto Rico organized by the New York Academy of Sciences. The work was supported by the American Museum of Natural History, the Voss Fund and the Peabody Museum of Yale.

THE NEW NATIONAL PARKS OF CHILE

EASTER ISLAND and the Juan Fernandez Islands have been declared national parks by the Chilean Government. The impressive sight of hundreds of stone portrait figures on the hillsides of Easter Island has been endangered at times by persons damaging or carrying off statues, and other relics, as well. Easter Island lies 2,000 miles west of Chile and over 1,000 miles from its nearest island neighbors. But that long haul over which any prize piece of the island's heavy art must be carried in order to get it anywhere has not always deterred collectors.

With stronger government supervision of Easter Island

and its antiquities, science can take renewed interest in clearing up the mysteries of the "loneliest inhabited island in the Pacific." Two scientific expeditions had already made the island their goal this season, in the hope of solving the riddle of the great stone faces. It is conceded that natives carved the figures, some of which weigh full 40 tons. Natives pushed and slid the stone giants from the quarry down the hillsides. But that does not explain enough. Science wants to know whether the stone faces represented gods or native residents, and why they were carved at all, and why some were little fellows in stone, and others towered over 30 feet high. Science wants to know why the statue-making stopped abruptly, as it did one day with an unfinished masterpiece still at the quarry.

Besides the statues, unique in Pacific art, Easter Island had another ancient and mysterious distinction. Its people could read and write, and in all Polynesia they were the only islanders who could. Attempts to read the writing have given only partial success. And students of man's history want almost even more to learn whether natives on Easter Island made that great invention of a writing system for themselves; or whether they brought or borrowed the invention from somewhere else. Most important of all, scientifically, if the Easter Islanders did import their writing system, from what direction did they get it? It is of great historic interest to know whether a people so remarkable was linked culturally to Indian civilizations of South America or to some Asiatic homeland.

Easter Island, now a Chilean sheep ranch, is on no beaten tourist cruise track, and is not likely to be. One supply ship a year, private yachts and occasional wandering ships touch on the shores of this island that is world famous.

Two volcanic islands, less than 500 miles from Chile, compose jointly what is known as Juan Fernandez. Both are included in the part designation, and both have natural features of interest. There are beautiful forest scenes, great ferns, streams and wild life, including fish and wild goats.

ITEMS

THE active principle of ergot, a drug once widely used in childbirth, has been isolated by H. W. Dudley, biochemist of the Medical Research Council, and Dr. Chassar Moir, London University gynecologist. Scientists have long sought to find the substance in ergot which is responsible for its effect on the uterus. The success in this search, just reported by Dr. Moir and Mr. Dudley to the *British Medical Journal*, marks the culmination of a three-year alliance of chemistry and clinical medicine. Ergometrine is the name of the newly-isolated substance. When given by mouth, it produces strong contractions of the uterus after eight minutes. Hypodermic injections start the contractions within four minutes, on the average. Ergometrine belong to the class of drugs known as alkaloids. It differs markedly from and is probably simpler than other alkaloids isolated from ergot which were thought previously to be responsible for the drug's action on the childbearing organ. These are now finally proved not to be responsible for the drug's action. These results are said to be in accord with the findings of Dr. A. K. Koff, of the Johns Hopkins Medical School.

JELLYFISH capture and devour baby fishes of all kinds in great numbers, according to Dr. E. W. Gudger of the American Museum of Natural History, writing in the *Bulletin* of the New York Zoological Society. One specimen was kept under observation in an aquarium, and in six weeks ate a couple of dozen tiny fish. Other species can capture and devour fish much larger than themselves. One, which Dr. Gudger describes, pulled itself over its catch like a mitten over a hand. Another, in its eagerness to get its stomach around its victim, literally turned itself inside out. The jellyfish itself is not a real fish, but belongs to a much lower order of life. It consists of an umbrella-shaped body, with a fringe of long tentacles armed with paralyzing stings for capturing its prey, and a projecting mouth-like organ in the middle. Not all fish are ready victims to jellyfish. There is at least one species that can dodge in and out among the deadly tentacles, and seems to prefer thus living paradoxically in the protecting shadow of a known and familiar danger to being exposed to the attack of other fish that fear its stinging, hungry host. Yet the jellyfish's little housemate is not immune to the stings, as has sometimes been stated. Dr. Gudger cites observed cases where individuals of this species, touched by the tentacles, have been paralyzed, drawn up to the mouth, and engulfed.

DUST storms may continue in the spring, and may blow up even in summer, if the Western drought area continues unwatered, the Weather Bureau informed Science Service. There is a strip of territory, stretching from the western Dakotas southward to the Texas Panhandle, that has been practically without rain for several years. Due partly to this deadly drought, partly to ill-advised plowing up of the age-old grass cover in the war-time wheat-boom days, the soil is all dust, ready for any wind to pick up and carry away. The present season—late March and early April—is the normal time for strong wind storms. They have been blowing in the West for ages; and dwellers on the Plains have long since got used to occasional dust storms. The winds are not becoming stronger, the Weather Bureau emphasizes; there is just more dust for them to pick up. It is this overloading of the upper air with fine dust that has made it possible, this spring and last, for dust storms to reach the East, and even the Atlantic seaboard, which had not known dust before.

THE Hot Springs National Park has a new hot spring, one which will add approximately 25,000 gallons a day to the park's supply of hot waters. The spring itself is not new, but its existence underground has just been discovered in connection with excavations for the promenade development. The temperature of the spring is 148 degrees Fahrenheit. Its waters will be collected and run into the general hot water system, from which the bath-houses are supplied.