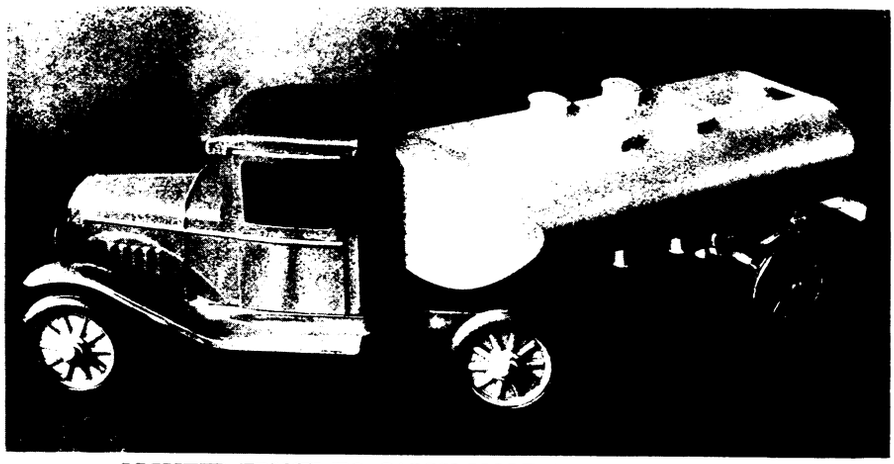

LIGHTER TRUCK TO CARRY MORE GAS: A MODEL.

HEREDITY

Scientists Measure Size of Genes Without Seeing Them

THE UNIT of heredity known as the gene, that controls physical characteristics and passes them on from generation to generation in man and other living things, has been measured.

Its largest size is one quintillionth of a cubic centimeter. This is just about the volume that fifteen protein molecules, one of the largest organic chemical aggregations, could crowd into.

This determination of the size limits of the bearers of heredity, announced to the American Association for the Advancement of Science by Drs. John W. Gowen and E. H. Gay, of the Rockefeller Institute for Medical Research, is considered an important fundamental step in the development of biology.

Genes are the units within the chromosomes which determine the development of physical characteristics when, through the union of male and female germ cells, a new individual is created. Chromosomes can be seen readily with the microscope, but the single gene is probably too small to be seen by the eye even when aided by the most powerful optical means. The gene is as important to biology as molecules and atoms are to the physical sciences.

"We postulate the existence of the gene because of the properties it gives to aggregates of other matter," Drs. Gowen and Gay explained. "Size is a fundamental structural characteristic. The measurement of size, even though it may be crude, has, if we may judge by our sister sciences, always led to further progress."

The Rockefeller scientists based their discovery of the gene's size upon the discovery made several years ago that X-rays smashing into genes will change the bodily characteristics that they transmit. They used the drosophila fruit flies that have been experimented upon to contribute so much to the new knowledge of heredity obtained since the turn of the century. Pure X-rays specially produced were used to bring about the changes, or mutations, in genes. Thousands of flies were used in the experiments. The magnitude of the average gene was found by dividing the amount of chromatin, or material in the chromosome, by the number of genes estimated by the mutations observed.

The total number of genes in any one cell was shown to be not less than 14,380. This corresponded to a largest gene size expressed numerically in cubic centimeters as one-tenth multiplied by itself eighteen times. In attempting to visualize this extremely small volume, one quintillionth of a cubic centimeter, it may be helpful to remember that a centimeter is a little more than a third of an inch.

These gene size determinations check approximately with those reported several months ago by Prof. Oswald Blackwood, of the University of Pittsburgh.

Science News Letter, January 14, 1933

ENGINEERING

Airship Engineers Design New Gasoline Tank Truck

FROM THE SAME factory that has produced the navy's giant airships there will soon be issuing a new kind of gasoline trailer truck made of light weight aluminum and designed for safety.

By using the skilled engineers and wokmen who are now completing the airship Macon, the Goodyear-Zeppelin Corporation plans to make it possible for auto trucks to transport more gasoline and oil over highways and still not violate the regulations that highway officials enforce to prevent unduly heavy trucks damaging roads.

The new aluminum semi-trailer unit for gasoline consists of three cylindrical tanks with a low center of gravity. These not only carry the gasoline but also support the load as beams. Made of aluminum that weighs only 37 per cent. as much as the usual steel, engineers estimate that the new tank combination will save 19 per cent. of the hauling cost, an economy of about $15 a day.

Science News Letter, January 14, 1933

MEDICINE

Serum-Virus Mixture Protects From Paralysis

CONSIDERABLE protection against infantile paralysis in monkeys was obtained by a properly balanced mixture of living causative virus and serum from the blood of recovered patients, Dr. Maurice Brodie of McGill University reported to the Society of American Bacteriologists.

The mixtures were given either combined after incubation at body temperature or separately. The amount of serum must be no more than just enough to protect the animals against paralysis.

Dr. Brodie was investigating the relation between the power of the virus to produce disease and the resulting protection given by skin injections of small doses of it. Previous workers had shown inconstant and unreliable results with virus weakened by heat or germicides. So Dr. Brodie decided to use living virus that had a low disease-producing potency. He found that the protection obtained by injection of such virus was directly proportional to the disease-producing potency of the virus.

Science News Letter, January 14, 1933