The fundamental raw materials for the survival, growth and reproduction of animals have been grouped under four heads; sufficient fat or sugars to supply energy for body heat and locomotion; a small amount of metallic salts; accessory substances, known as the vitamins; and nitrogenous materials containing some of each of the 20-odd "amino-acids" of which the proteins are constructed.

Hitherto, animals fed on artificial diets lacking one or more of the amino-acids, failed to develop properly. Dr. Rose demonstrated, however, that experimental laboratory animals reached maturity if instead of histidine a substance similar but lacking the characteristic amino group, was eaten.

"This is the first time that a synthetic product, devoid of an amino group, successfully replaced histidine", Dr. Roso explained. "Growth, while not so rapid, was decided."

Presumably, the successful substitute, imidazole lactic acid, stole an amino group from other amino-acids in the artificial diets.

The discovery may be of twofold practical significance, it is pointed out. Proteins classed as "incomplete", such as gelatin which lacks three of the essential amino-acids, may be rendered adequate from the nutritional point of view. by the addition of relatively simple compounds. Again, future economic or agricultural conditions may render it expedient to manufacture food proteins, instead of waiting for the process to be carried on naturally by plants. In such an event, the synthetic chemists now know that substances approximating, but not duplicating the natural materials, may be adequate for maintaining the health and functioning of the body.

The report is of particular interest in view of the fact that histidine is a constituent of nearly all common proteins and as such has been regarded as fundamental.

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## BEE AND SILKWORM DISEASES MAY BE FOUGHT WITH OXYGEN

Diseases of bees, silkworms, fishes and even plants, caused by the minute one-celled animals known as protozoa, may be banished by means of the common element oxygen applied under pressure, according to Dr. L. R. Cleveland of the Harvard University Medical School. Preparation of immunizing cultures against certain diseases, ridding stored nuts and grain of insects, and the study of the life-relations between the protozoa in the bodies of animals and the animals that thus harbor them, are other problems suggested whose solution may be sought by means of oxygen under pressure.

One of the most troublesome and expensive diseases of silkworms, Dr. Cleveland points out, is caused by a certain protozoan species. He has found in his earlier studies that infected insects can be placed in bottles of pure oxygen at moderately high pressures without harm to the insects but that after this treatment the protozoa are all dead. He therefore suggests this treatment for protozoan-plagued silkworm colonies, and for bee "nuclei", consisting of a queen and a few workers, with which a hive is usually started when a choice bee strain is to be introduced.

After pointing out the possibility of obtaining protozoan-free plants and insects for the purpose of making a study of certain puzzling plant diseases, Dr.

Cleveland brings his argument closer to man; stating: "It has been reported that flagglates producing a disease in plants may, after passage through an invertebrate (insect) and a vertebrate host (lizard), acquire pathogenic properties for a mammal. Oxygenation will perhaps give us uninfected but susceptible hosts to work with, which will enable us to determine beyond question the possible method or methods of infection in nature."

Dr. Cleveland's earlier work on the effects of oxygen on protozoa and their insects hosts won him half of the annual prize of the American Association for the Advancement of Science at its meeting in Washington during the holiday week in 1924.

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## SUPERSENSITIVE INDIVIDUALS GET ASTHMA FROM LIGHT

The fairy story princess who spent a miserable night because of a pea concealed under the nine mattresses in her bed was no more sensitive than some everyday human beings.

In the laboratories of Dr. W. W. Duke, hay fever and asthma are being studied, and he has shown that an individual may be sensitive to light or to certain temperatures, just as hay fever victims are sensitive to ragweek pollen or other proteins.

Dr. Duke has illustrated with human patients how weals can be produced in a very few moments on the body of a person who is sensitive to heat or cold or light, and he has shown how such exposure to a physical agent may lead to asthma or to all the symptoms of anaphylactic shock.

Persons are sometimes sensitive, Dr. Duke finds, not to many degrees of cold but only to a definite small range of temperature, as from ten to fourteen degrees above freezing. These patients showed no sensitivity to a temperature around the freezing point. Ice could be pressed against their skin without producing abnormal effects. Yet a short exposure of an area of the skin to a slightly higher temperature produced ugly weals.

This type of case has been little studied and is almost unknown to the average physician. No cure is known for it. The person who is sensitive to a protein can be treated with gradually increasing doses of the toxic substance until his tolerance is much greater, but the patient who is supersensitive to light or heat must always avoid the particular type of radiation that poisons him.

The condition, which is known to medical science as allergy, may be produced not only by pollen proteins and radiations, but also by smokes, meat and fish proteins, and fish glue. There are a number of theories as to the cause of allergy, Dr. Duke explains, but so far none has been substantiated.

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A little village in the wilds of British Columbia has a museum of Indian art and craftmanship, founded by an Indian chief.

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