

NUTRITION

Protein Needs Disputed

The role of protein in the diet is being seriously questioned by scientists who have presented evidence that this body-building substance can be harmful.

► **WHETHER TOO** much protein or too little protein is better for long life and disease resistance was the question discussed at a symposium on protein requirement and its relationship to man's health.

Protein deficiency may be the number one public health problem throughout the world, according to some researchers, but others reported evidence that persons getting a high protein diet may be eating dangerously.

Long-term studies with rats given high protein and high carbohydrate diets showed the diet was associated with reduced life expectancy and a higher incidence of organic and degenerative diseases. Rats kept on this high protein and high carbohydrate diet had an average life expectancy of 800 days compared with a normal life span of 1,000 days. (One year in a man's life is roughly equivalent to 30 years in a rat's.)

A further effect of the diet was reported by Dr. Morris H. Ross of the Biochemical Research Foundation, Newark, Del. There was a 40% incidence of spontaneous tumors among rats fed with this diet. With less protein and reduced total calory intake the spontaneous tumors were reduced to two percent, Dr. Ross reported at a meeting of the Federation of American Societies for Experimental Biology in Atlantic City.

Positive evidence that low protein and low carbohydrate diet was beneficial to the rats was seen in the physical condition of rats fed this diet. Not only did they live long, Dr. Ross said, but they were "brighter, more alert and curious, they looked younger than their years and their coats were better—the fur was fine, like that of a baby rat."

Although it is impossible to say that what happens in the laboratory rat happens in man, the evidence from his studies seems to agree with what has already been observed in some persons' diets.

Another nutritional role of protein was questioned at the symposium. Scientists have observed that when a person is under stress, caused by disease, shock, etc., his stored protein is reduced. Commonly this person is treated by giving him added protein. This therapy may be harmful, or not essential. More study needs to be made of this problem, the scientist concluded.

Completing the picture of protein in the diet was a description of the disease kwashiorkor by Dr. N. S. Scrimshaw of the Institute of Nutrition of Central America and Panama, Guatemala.

This disease, which Dr. Scrimshaw reported as one caused by severe protein deficiency during the preschool years, probably accounts for one-third of the infant mortality in underdeveloped countries. There is also probably a relationship between the protein deficiency and increased incidence of infectious diseases, Dr. Scrimshaw said.

In the human infant, protein makes up about 12% of its body. This increases to about 18% to 20% within the first few years, an amount that is maintained throughout the individual's life. For this reason protein deficiency is particularly critical during a child's early years.

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MEDICINE

Tadpoles Point Way to Better Skin Grafts

► **SMOOTH, NORMAL TISSUE** may replace damaged skin without leaving scars if new knowledge about grafting can be applied to humans.

A grafting technique, now accomplished among young tadpoles, could eliminate scar tissue in wounds that are healing, Dr. W. H. Hildemann, University of California Medical School, reported.

The scar tissue would not be formed because grafted skin would protect regular tissue until it could grow normally, he explained at the annual meeting of the Federation of American Societies for Experimental Biology in Atlantic City.

Dr. Hildemann took skin transplants of tailbud tissue and successfully exchanged them between tadpoles up to 36 days of age. In contrast to human tissue, where

transplanted skin will grow successfully only between identical twins, the tadpole tissue grafts took even when several different donors were involved. The key to a possible solution of the grafting phenomenon may be the lymphatic system, the researcher speculated.

When a skin graft fails to take, it is because the individual reacts to the foreign tissue the same way he would react to a virus or to bacteria: he develops antibodies to the tissue. By learning at what stage this immune response capacity is developed, Dr. Hildemann said, we may be able to make successful grafts in mammals and humans.

Studies are now underway to see when the tadpole's lymphoid tissues, the spleen and the lymph "heart" that pumps lymph just as the heart pumps blood, develop and how they change between the 36th and 37th day.

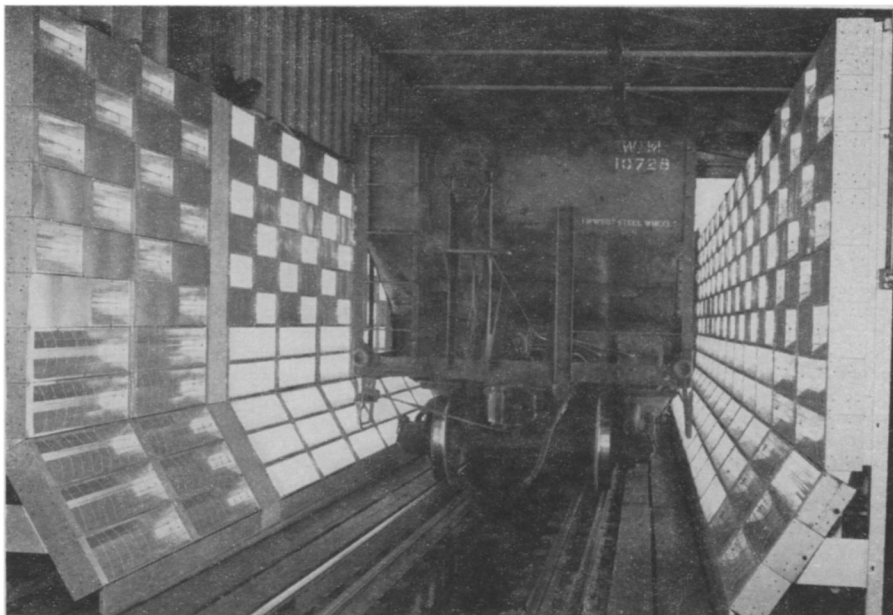
A result of his studies is the finding that tolerance in frogs is not individual-specific, Dr. Hildemann said. For example, tadpole A received a successful graft from tadpole B, and later it accepted a skin graft from tadpole C. This indicates that there may be some important antigens that are shared.

Thus it may be possible to "type" persons for their white blood cells just as we do for the red cells. Scientists could perhaps match antigenic differences or similarities and make a skin transplant that would last for a longer time than is now possible.

A skin graft that "stuck" for as long as two to three weeks would be helpful in treating burns, Dr. Hildemann said.

The studies, supported by the National Cancer Institute and the National Institutes of Health, may help circumvent the reactions that lead to the breakdown of vital tissue grafts.

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COAL CAR "LAMP OVEN"—Quartz infrared heat lamps have been used to thaw coal frozen in railroad hopper cars of the Western Maryland Railroad, operator of this test installation. This method may provide less maintenance, greater speed and economy, and less damage to railroad cars than in previous thawing methods. The infrared lamps were developed by General Electric in 1954. Fostoria Pressed Steel Company developed the oven.