colon bacilli found in the lambs was then demonstrated by Dr. Heller. When grown in test tubes the isolated germs produced a poison identical in effect with that obtained from the lambs. Dr. Heller, who worked on this problem with the cooperation of the University of California's Division of Veterinary Science, located at Davis, California, did not have the opportunity to clinch the proof by infecting lambs, because when the presumably guilty organism was isolated and proved rapidly fatal for guineapigs, the lambing season was over.

Dr. Heller hopes to be able to continue research upon this lamb disease. It seems probable that it is widespread in the sheep raising areas of this and other countries, and must cause a loss amounting to many thousands of dollars annually. It may also be related to a similar disease of calves which is responsible for even larger financial losses.

Science News Letter, June 24, 1933

PHYSIOLOGY

Bone Age Gives Index To Mental and Emotional State

BONE development is now being used as a guide in treating certain children who are mentally retarded or emotionally unstable, physicians gathered in Milwaukee for national medical meetings were told. Dr. E. Kost Shelton of Santa Barbara, Calif., has found the stage of bone development, or bone age, a good index to the speed with which certain vital transformations are going on in the body, he reported to the Association for the Study of Internal Secretions.

These transformations are the processes by which energy for the body's activities is obtained from the burning of food and oxygen. When these processes, called metabolism, proceed at either too fast or too slow a rate, the health is seriously affected.

The bone age, which can be determined by X-ray examination, is correlated with the metabolic rate, and can be used as a guide in treatment of certain types of disordered metabolism, Dr. Shelton found.

Metabolic Speed Indicated

"Any metabolic disorder in childhood, when sufficiently severe to produce mental or emotional symptoms, will be reflected in bone development," he gave as his opinion. He believes that the rate of bone development is determined by the metabolic speed and therefore is the best guide to the latter.

Dr. Shelton described a number of patients suffering from retarded growth and defective mental development, in whom he also found very much retarded bone growth. Treatment with extract from the thyroid gland, which speeds up the rate of metabolism, improved markedly the condition of the patients. Not only did they improve mentally but the change was reflected in the bones, which reached the normal stage for the patients' ages and in some cases the body height increased. Additions of vitamins A and D and feeding an otherwise adequate diet had no effect on metabolic speed or the development age.

Science News Letter, June 24, 1933

CHEMISTRY

New Ship Fumigant Safer Than Hydrocyanic Acid

CARBOXIDE gas, a mixture of nine parts of carbon dioxide and one part of ethylene oxide, has been found an effective fumigant to rid ships of cockroaches and other insect vermin, without the serious danger to human life that has always attended the use of hydrocyanic acid, now the standard gas for this purpose. The experiments establishing the value of the carboxide mixture have been conducted by the Bureau of Medicine and Surgery of the U. S. Navy.

The carbon dioxide in the mixture removes the fire hazard that would go with unmixed ethylene oxide, and at the same time practically doubles its toxicity for insects. Carboxide has been found effective in comparatively small dosages, making it economically practicable for conveniently short periods of exposure.

A detailed report on the experiments will appear in the July number of the *U. S. Naval Medical Bulletin.*

Science News Letter, June 24, 1933

GENERAL SCIENCE

Dr. Isaiah Bowman Elected Research Council Chairman

DR. ISAIAH BOWMAN, director of the American Geographical Society of New York, has been elected chairman of the National Research Council which has headquarters in Washington. He succeeds Dr. W. H. Howell, the physiologist who has served as the chief administrative officer of the council for the past year. Dr. Bowman will remain director of the American Geographical Society and will devote half of his time to the National Research Council. He will perform the functions exercised by Dr. Vernon Kellogg as permanent secretary until his resignation and election as secretary emeritus last year.

Dr. Howell, formerly director of the Johns Hopkins School of Hygiene and Public Health at Baltimore, was drafted for a year as chairman during a reorganization of the National Research Coun-

cil. He plans to return to research work in physiology, a field of endeavor that has won him international honors. Dr. Howell will continue as chairman of the executive committee of Science Service.

As a geographer, Dr. Bowman has conducted researches in various parts of the world and he was recently elected president of the International Geographical Congress. Under his guidance the American Geographical Society has greatly promoted fundamental research in geography and cartography.

Adding to his many other honors, Dr. William H. Welch of the Johns Hopkins University, known as the "dean of American medicine" has been elected honorary vice-chairman of the National Research Council, an office that has just been created.

Science News Letter, June 24, 1933

PUBLIC HEALTH

Long Preparation Planned For Future Specialists

IMPORTANT to the public needing special treatment for diseases of the nose and throat, the eyes, or other parts of the body are plans discussed at the meeting of the American Medical Association in Milwaukee for regulating more closely the practice of the special branches of medicine. In the future, a physician will not be able to set himself up as a specialist on his own statement. Instead he will be required to take special training for several years and to pass examinations in order to qualify as a specialist, if the plans now under discussion are carried out.

Science News Letter, June 24, 1933

BIOCHEMISTRY

Sea Water Nitrates Increased By Unknown "Something"

THERE seems to be something in sea water, something that may not be alive, which nevertheless can change ammonia into nitrate when sunlight shines upon it.

This discovery, highly important in its bearing on the understanding of both "pure" marine biology and such practical applications as fisheries problems, is announced in *Science* by C. E. ZoBell of the Scripps Institution of Oceanography.

Nitrates are necessary for the growth of plants, both in the sea and on land. On land, there are groups of soil bacteria that attend to the conversion of other nitrogen-containing compounds into nitrates, making them available for plant use. But such bacteria have never been found in the sea, and when Mr. ZoBell checked up on the work of previous investigators he also was unable to demonstrate their existence. Even when he purposely planted nitrifying bacteria in sea water and gave them the most favorable food and temperature conditions, they all died. There remains, of course, the possibility that there are other kinds of nitrifying bacteria in the sea that have not yet been detected; but this is necessarily only a conjecture.

Yet the nitrifying process goes on in the sea. Mr. ZoBell was able to prove, by chemical tests, that sea water changed ammonium salts into nitrates when sunlight shown upon it, though it did not do so in the dark. Passed through a fine-pored filter to strain out all bacteria, sea water still possessed this nitrifying power under sunlight. But sea water heated in an autoclave under steam pressure no longer formed nitrates. Neither did artificial sea water, synthesized out of distilled water and appropriate quantities of various salts.

Exposure to radiation from a mercury arc, rich in ultraviolet rays, speeded up the nitrifying power of sea water very much. Under such radiation as much ammonium was changed into nitrate in two hours as could be produced in two weeks under natural sunlight.

What is the mysterious stuff in sea water that does the work of nitrifying bacteria for the plants of the sea? Mr. ZoBell does not say. But he is continuing his researches.

Science News Letter, June 24, 1933

A kind of slate called basanite is the "touchstone" used to test the purity of gold: the amount of alloy is shown by rubbing the metal against the basanite and noting the color on the stone.

POPULATION

Native White Birthrate Now Constant in Parts of Country

THE DECLINE in the number of children borne by native white women of the United States, which has so concerned those interested in population trends, seems to have struck bottom in some sections of the country.

In northern New England and rural New York the ratio of children to married native white women of child-bearing age has remained practically constant during the past thirty years, even after allowance is made statistically for those classified as "native" who are of foreign or mixed parentage. And this constant ratio is contrasted with a sharp decline in child-bearing or "natality" in most parts of the country. The most rapid decline in recent years has occurred in the South and Rocky Mountain states where birth rates are still very high.

These facts and the suggestion that the native-white population of the United States seems to be reaching a fair degree of stabilization are contained in a report by Dr. Frank Lorimer, of the Eugenics Research Association. This report will appear in full in the July issue of the Milbank Memorial Fund *Quarterly Bulletin.*

Science News Letter, June 24, 1933