

315, attaches the doctor's certificate, and gives it to the local board. The board then gives him the extra points.

Diabetics usually take extra cream and butter to supply the fuel they miss by not eating sugar or much carbohydrate. But the N. Y. Diabetes Association believes that the diabetic will not need extra cream if sufficient whole milk is

available. Oleomargarine and other fats, the association states, may replace butter for fuel needs to the extent advocated for normal persons.

Each diabetic, of course, must have his diet prescribed by his physician, but in general the above statements hold true for diabetic food requirements.

Science News Letter, February 27, 1943

PHYSICS

Hard to Weigh a Battleship

Largest and smallest things are hardest to weigh. Mass of an electron can be determined with accuracy of only one part in a hundred.

► THE 52,000-TON full-load displacement of the new "Iowa" class battleships may actually be as much as 52,052 tons or only 51,948 tons without anybody knowing the difference. A battleship cannot be weighed with an accuracy closer than one part in a thousand, Dr. Harvey L. Curtis of the National Bureau of Standards stated in his address as retiring president of the Washington Academy of Sciences. By contrast, a kilogram weight (basic unit of the metric system, a little more than two English pounds) can be compared with another with an accuracy a little less than one part in a billion.

Biggest things and smallest things are most difficult to measure and weigh, Dr. Curtis told his audience. A battleship is about the biggest lump of matter which human means can weigh directly. In the opposite direction, the antipneumococcus germ or virus particle is among the smallest of living things. It would require 1,000,000,000,000,000,000,000,000 (one octillion) of these to weigh as much as a blue whale, largest of all animals. Far below this tiniest of germs, however, is the electron, smallest of all known objects. Its mass has been determined within an error of one per cent—but this is an accuracy of only one part in a hundred, as compared with one in a billion when kilogram weights are being compared.

As with weights, so with lengths. The standard meter bar (the laboratory's "yardstick") can be compared with another meter bar with an accuracy of one part in ten million, said Dr. Curtis; perhaps under very favorable conditions to one part in fifty million. The error amounts to something between a twentieth and a hundredth of the diameter of a fine spiderweb.

Accuracy of comparisons falls off with either increase or decrease in lengths being compared. The standard base line used in the most accurate kind of surveying is usually 1,000 meters. Its accuracy, however, can be determined only to one part in a million, as compared with one in ten million for the single meter. The millimeter (a thousandth of a meter) can be determined with an accuracy of only one part in a few hundred thousand. The distance between the nuclei of a hydrogen molecule is known only to one part in a thousand, while the diameter of a proton, the smallest known object, has not yet been determined within an error of less than one part in ten.

Science News Letter, February 27, 1943

PSYCHIATRY

Building-Stones of Peace Proposed by Psychiatrists

► CONSCIENCE and intelligence are the forces which psychiatrists believe can be used as building stones for lasting peace, it appears from pre-convention discussion as members of the American Orthopsychiatric Association gathered in New York for their annual meeting.

Feelings of insecurity, anxiety and aggression may lead nations into the disaster of war, as they lead individuals into personal disaster such as disordered mentality. Psychiatrists treating victims of mental disorder build on the individual patient's inner resources of personality, chiefly his conscience and intelligence, in helping him to recover his equilibrium.

They hope, Dr. Helen Langner, chairman of the association's publicity committee, explained, that the same re-

sources, conscience and intelligence, can be used to help a group of people, or a nation, overcome the emotional forces that promote war.

The present century, Dr. Langner pointed out, has been characterized by two world wars and by progress in deep personality exploration with the possibility of counteracting the forces that lead to war.

The importance of intelligence and thinking for directing one's emotional life is being stressed more and more by psychiatrists, Dr. Langner said.

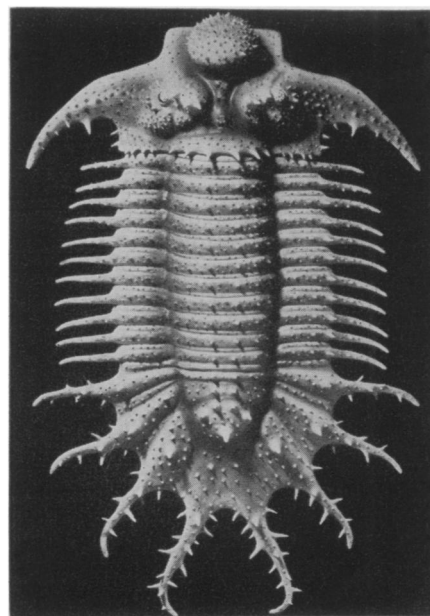
New trend in treatment of mental disorder is the use of group therapy, that is, treating patients in a group rather than singly. Developed originally as a more effective means for treating certain kinds of patients, group therapy is proving increasingly useful because of the war-caused shortage of psychiatric personnel.

Science News Letter, February 27, 1943

PALEONTOLOGY

Specimen of America's Biggest Trilobite Found

► THE ONLY KNOWN specimen of *Terataspis*, America's largest trilobite, that retains the head, body, and tail was discovered last fall near Buffalo by Irving G. Reimann, curator of geology and



GIANT TRILOBITE — This new restoration of *Terataspis*, biggest of its family known from this continent, has just been placed on display at the Buffalo Museum of Science.

paleontology, Buffalo Museum of Science. The specimen, along with its restoration, is now on display in that Museum. Thirteen inches long, about half the maximum length attained by the species, the specimen shows the underside of the left half of the animal, the right half being missing.

This fossil marine animal, dating back to Devonian times, about 250 million years ago, was found in the Onondaga limestone of the Fogelsanger Quarry in Buffalo's suburb, Williamsville. Since

very little of the specimen showed when it was found, much laborious chipping was involved to bring it to light. It has created great interest because previously no uncrushed body segments were known, and restorations had been made only from fragments.

The restoration pictured on page 132 was made by Paul Marchand, staff artist, under Mr. Reimann's direction. It is 20 inches long.

Science News Letter, February 27, 1943

PSYCHOLOGY

Causes of Absenteeism

Fatigue, friction between individuals, and poor morale contribute largely to time lost, including that blamed on trivial illnesses.

► ABSENTEEISM in war plants, an extremely serious problem wherever it occurs, is often due to psychological causes.

They are extremely varied and can be different not only for each plant but for each department.

Time lost may be due to fatigue. Even where the work week is kept to a reasonable length, certain individuals may be putting in more hours than the average. Or they may be working at great tension to keep their individual production high. Rest periods should be enforced for such self-starting and self-pushing workers. Otherwise, they will suddenly go stale and will take time off without warning, disrupting the work of others.

Minor illnesses contribute to time lost. These may be so slight as not to be reported as illness—colds, headaches, indigestion and other such trivial ills will make workers late or off the job for mere fractions of a day, but these fractions add up. Such slight illnesses are often due to fatigue, but often they represent a kind of mental friction in the human machinery.

Petty irritations over working conditions, uncongenial companions, unreasonable or untactful supervisors can all result in such physical upsets. And where nervous tension is high, as it tends to be in wartime, a sharp word spoken thoughtlessly by a supervisor can produce a storm of tears or temper in an employee and with it time off in the infirmary or washroom to recover poise.

Such states of friction may not even be realized wholly by the workers. It is

quite possible that a supervisor or trouble-making employee can be disliked without any surface show of the hatred produced. It shows up, indirectly, however, in the time-lost reports. The accident rate is likely to be high, headaches and colds frequent, oversleeping common.

The mechanics of living becomes increasingly difficult in wartime. It is harder without a car to do personal errands, shop for the family, get to the bank, and so on. Anything that can be done to provide community meals, community services, convenient shopping centers will help to reduce absenteeism in war plants.

But probably chief among the psychological causes of absenteeism is low morale. Workers too often these days do not know what they are working on and what it has to do with the war. Necessary secrecy may keep the workers producing a vital part from knowing how it is to be used or where. Production in one plant jumped tremendously when the workers found out that the mysterious plastic something they had been producing was used by General Doolittle in his famous raid on Tokyo. Main contributor to high morale is the feeling that the work being done is of major importance, that the worker's part in the war effort is recognized, and that each individual is considered necessary and missed when he is absent.

Science News Letter, February 27, 1943

United States *soldiers* eat approximately twice as much as civilians.

MEDICINE

TB Research Initiated As Result of Army X-Raying

► A NEW tuberculosis research program has been initiated as a result of the chest X-rays for detection of tuberculosis given the millions of men entering the armed forces, Dr. William Charles White, chairman of the National Tuberculosis Association's committee on medical research, announces.

The research is being done under the direction of Dr. Carroll E. Palmer and Dr. Herman E. Hilleboe, of the U. S. Public Health Service, with financial aid from the National Tuberculosis Association.

Student nurses in general hospitals will be the guinea pigs of this war-inspired research. The object is to discover the constitutional factors that decide whether or not a person will be able to resist the tuberculosis germ invasion. Student nurses were selected for the study because they are subjected to frequent contact with actual cases of tuberculosis and can be examined at short intervals during their three years period of training.

Only when the factors of constitutional resistance are known, Dr. White declared, will doctors know how to prescribe the right treatment for each individual case of tuberculosis. At present, the only safe procedure for all cases in the earliest stages is immediate and complete rest in bed.

How to prescribe the right treatment for each man rejected by the armed forces because of very early tuberculosis is, Dr. White said, the most pressing current tuberculosis problem.

Science News Letter, February 27, 1943

A five pound *meteorite* was found in Vermont near South Strafford in August 1942; the first reported for that State.

● RADIO

Saturday, March 6, 1:30 p.m., EWT

"Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. C. C. Little, managing director of the American Society for the Control of Cancer, will discuss "The Scope and Trends of Cancer Research."

Monday, March 1, 9:15 a.m., EWT; 2:30 p.m., CWT; 9:30 a.m., MWT; and 1:30 p.m., PWT

Science at Work, School of the Air of the Americas over the Columbia Broadcasting System, presented in cooperation with the National Education Association, Science Service and Science Clubs of America.

"The Chemistry of Courage" will be the subject of the program.