

which can stand a force of 3,000,000 pounds, is thrown upward so that any occupants are not hurt by the shock.

Carelessness is apparently still responsible for grade crossing accidents, study

reveals. A check of 3,569 drivers showed that while approaching grade crossings 2,907 failed to look in either direction, while 602 looked in only one direction.

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RADIOLOGY

Pneumonia May Be Caused By Sucking Oil Into Lungs

Physicians Warn Against Forcing Oil on Infants; Patients Wear Gas Masks; X-Rays Show Lead Poisoning

PNEUMONIA due to oily substances being drawn into the lungs is "not uncommon," Drs. Ralph S. Bromer and Irving J. Wolman of the University of Pennsylvania said at the Fifth International Congress of Radiology, Chicago.

Cod liver oil, mineral oil or liquid petrolatum, poppy seed oil, olive oil, sesame oil and even cream are among the oily substances which have caused the condition, known as lipoid pneumonia. The oil may get into the lungs from the nose, or from the throat if the child does not swallow properly, especially if he is resisting it. The mild vegetable oils caused the least reaction while cod liver oil, lard and other animal fats caused sudden, violent reaction in the lungs with bleeding and tissue destruction. Liquid petrolatum or mineral oil caused proliferative pneumonia.

Serial Pictures Needed

X-ray diagnosis can be made in severe cases, Drs. Bromer and Wolman found, but in moderate and mild cases serial X-ray pictures and an accurate history of the case are needed for positive diagnosis. The need for serial X-ray pictures was emphasized. In a series of 27 cases at the Children's Hospital, Philadelphia, 16 patients had had X-ray pictures made but the diagnosis of lipoid pneumonia was made in only one case. Twenty-two of the 27 died.

Infants and children who are small, weak, physically under par or suffering from nervous disorders seem particularly susceptible to the disease. It is not wise, the Philadelphia doctors warned, to give such a child liquid petrolatum as nose drops. Cod liver oil or mineral oil should never be forced.

Enlargement of the thymus gland in the chest, a dangerous condition found in some new-born babies, can apparently

be prevented to a large extent if the child's mother has sufficient iodine in her food and drinking water.

X-ray examination of the chests of nearly 1,500 infants, which suggest this conclusion, were reported by Drs. S. W. Donaldson and H. A. Towsley of Ann Arbor, Mich.

Because of the prevalence of goiter, a thyroid gland disease, in Michigan and other Great Lakes states and the relation of goiter to lack of iodine, the Michigan State Department of Health 13 years ago encouraged the use of iodized salt to make up for the deficiency of this essential element in the food and water of the state. At that time over a third of the school children had enlarged thyroid glands, a survey of 65,000 indicated. This has since dropped to less than one-tenth.

Before the introduction of iodized salt the babies were born with enlarged thymus glands, surveys indicated. In the series examined since 1930 by Drs. Donaldson and Towsley, less than one-fifth had enlarged thymuses.

Silicosis Diagnosis Unsound

X-ray diagnosis of silicosis is "not on a sound basis," Drs. A. E. Barclay, K. J. Franklin and R. S. Macbeth of Oxford, England, told members of the Congress.

They base this opinion on the fact that X-ray diagnosis of the disease which affects thousands of workers in the dusty trades depends on detecting fibrotic changes in the lungs. These changes, however, are not a disease form but the evidence of nature's attempt at healing.

Bearing out this opinion is the observation that the degree of fibrosis seen in X-ray pictures does not correspond with the condition of the patients.

"In extreme cases," the British scientist said, "we find men with marked

fibrotic lung changes who suffer little or no disability and are even sometimes quite fit for their strenuous work, while on the other hand we find men who are obviously completely incapacitated who show relatively little or even no definite fibrosis in the lungs and who cannot obtain compensation, for this depends on the roentgenological picture and not on the disability."

The irritating dust, usually silica, may not be the only factor in causing the disease, it was suggested. Anything that interferes with nature's mechanism for protecting the air passages from obstruction might pave the way for the deposition of the irritating silica dust. Studies of animals showed that the lungs of healthy animals can eject large quantities not only of inert dust but also dusts that are chemically comparable to those associated with silicosis. This action can be interfered with, however, and the results may be the retention of dusts in the lungs over a prolonged period.

Detect Metals in Poisoning

X-rays may prove useful in detecting small amounts of metals in the organs of the body in cases of poisoning, it appears from studies reported by Dr. L. Grebe of Bonn, Germany. The method would be equally useful in cases of poisoning due to industrial processes or in other types of poisoning.

Lead, mercury, gold, silver, copper, zinc, nickel and cobalt were among the metals which Dr. Grebe was able to detect by this method, which combines the X-ray and the spectograph.

He was able to detect the metals in the kidney, liver, heart, skin, muscle, intestinal wall, gall bladder, stomach wall, stomach contents, blood, spleen, spinal cord, brain, adrenal glands and uterus.

Patients Wear Gas Masks

Gas masks for patients during X-ray treatments will prevent radiation sickness in 98 out of every 100 cases, Drs. Harry F. Friedman and Phillip Drinker of Boston reported to the Fifth International Congress of Radiology.

Radiation sickness is a serious problem, often proving an obstacle to thorough treatment. The patient feels both sick and fatigued and may become anemic.

Breathing electrically charged air while X-rays are penetrating the body is what makes the patient sick, the Boston investigators found. The mask prevents this by de-ionizing the air or removing its electrical charge.

Various types of masks were used,

among them a hood of fine-mesh wire cloth. Simplest and cheapest arrangement, the investigators found, is a mask or respirator with rubber face piece and a charcoal cartridge to act as "ion trap." This was easy for the patients to wear and effective in 98 per cent. of the cases.

New, Mysterious Disease

The strange case of a man whose bones have turned pale red was reported by Dr. Eugene Freedman of Cleveland. No other case just like this one has ever been reported, Dr. Freedman said. He asked members of the Congress for help in discovering "the true nature of this man's disease."

The patient's bones show other changes besides that in color, and the bone marrow has been replaced by fibrous tissue. Hip bones, vertebrae and shoulder blades are affected. The condition has been going on for 12 years, starting when the patient was 16 years old. Although the disease has been progressing, the young man is not incapacitated by it. Dull, aching pains in the back and joints are the symptoms that have brought the patient into the hospital from time to time for treatment. Each time thorough study by X-ray, chemical and microscopic methods have been made, but the doctors still do not know the true nature of the disease or its cause.

More Broken Necks

More people are getting their necks broken these days than in the horse and buggy era, and the automobile is responsible, Dr. H. F. Plaut of Cincinnati told members of the Congress.

The particular part of the neck which gets broken is the atlas, the first vertebra at the base of the skull which forms the pivot on which the skull rotates.

"Previously fractures of the atlas were reported among longshoremen and in gymnasium accidents," Dr. Plaut recalled. "Now automobile accidents throw riders against the tops of cars and pitch them to the pavement with many cases of fractured atlases."

Most of these patients recover and are fully active, Dr. Plaut said. Fractures of the skull above the atlas are more dangerous.

The atlas is not easily injured by direct violence because it is well protected by other bones and is deeply imbedded in surrounding soft tissues. But in a head-on fall the force is directed against the weakest part of the atlas by the pressure of the skull at this point.

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PHYSICS

Radioactive Sodium Isotope Giving Off Positrons Found

DISCOVERY of a long-lived radioactive isotope of sodium, whose atoms are similar to the ordinary variety of the metal but have a slightly different weight and are radioactive, is reported by Prof. L. Jackson Laslett of the University of California. (*Physical Review*.)

This new discovery is not to be confused with artificially radioactive sodium itself, discovered three years ago by Prof. E. O. Lawrence of the same University. Prof. Lawrence's discovery is believed to be of medical value because it is a cheaper source of gamma rays, useful in treating cancer, than radium and because sodium is a constituent of salt, which can readily be injected into the body.

Positrons, like the more familiar electrons in mass but with the opposite kind of electric charge, are emitted by the metal whose atomic weight is 22. It has an unusually long life for an arti-

ficially radioactive material, it is reported, the period during which half of it will be decomposed being about three years.

Heavy hydrogen atoms, speeded up by means of the Berkeley institution's famous cyclotron, were hurled at a magnesium target to produce the sodium isotope. Seven months of observation and testing determined the "half-life" period of the element. Positrons are one of the newly-discovered "building blocks" of the atom and have not been frequently observed as a part of radioactive radiation.

At the same time, Dr. Harold Walke of the University of California reported discovery of an additional radioactive isotope of potassium. The new member of the potassium family has an atomic weight of 42. Other radioactive potassium isotopes have enabled scientists to calculate the age of the earth.

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CHEMISTRY

Scientists to Honor "Father of Modern Industrial Chemistry"

NATIONAL science organizations will join in a month-long series of events in New York City from Oct. 6 to Nov. 4 to celebrate the 100th anniversary of the birth of Dr. Charles Frederick Chandler, "father of modern industrial chemistry."

Dr. Chandler, a founder of the Columbia School of Mines in 1864 and of the American Chemical Society, one of the United States' premier scientific societies, will be honored in three Chandler Memorial Lectures, at presentation of the highly prized Chandler Medal to Dr. John H. Northrop of the Rockefeller Institute, by an exhibition of Chandleriana and at a Centennial Banquet on Nov. 4, Prof. J. Enrique Zaretti of Columbia University, chairman of the Centenary Committee, announced.

Thomas Midgley, Jr., vice-president of the Ethyl Gasoline Corporation and pioneer chemist in the field of anti-knock engine fuels, will deliver the first

Chandler Lecture at Columbia's McMillin Academic Theater on Oct. 6. Dean William de B. MacNider of the University of North Carolina Medical School will discuss chemical discoveries and their application to the chemistry of cells at the second Chandler lecture on Oct. 13.

A week later, Dr. Haven Emerson of the Institute of Public Health in Columbia's Medical School will speak on the late Dr. Chandler, "New York's First Public Health Chemist."

More than 20,000 former students of Dr. Chandler will join in doing him honor. Numbered among the 20,000 are many of the leading American chemists today.

Public health was the field in which Dr. Chandler achieved his greatest fame, but his work reached into almost every chemical industry in the United States during the decades following the Civil War.

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