

GEOPHYSICS

Weather Called Factor In Mine Explosion

► WEATHER CHANGES may have caused the recent mine explosion that trapped 37 men in a Pennsylvania mine, Dr. C. B. McIntosh, University of Nebraska, told SCIENCE SERVICE.

From a study of major coal mine explosions since 1839, Dr. McIntosh believes that mine air pressure and humidity readings can change as much in 24 hours, with the proper weather conditions prevailing, as the amount of change from January to July. He said the coal mine explosion which occurred Dec. 6, from the synoptic weather map, looks as though it might fit this picture.

The explosion in the shaft of the U.S. Steel Corporation's Robena No. 3 mine, which is the world's largest mechanical coal operation, was caused by methane gas.

Methane gas concentrations increase immediately before explosions occur. Under low pressure atmospheric conditions the methane gas can expand and spread through the mine. In Carmichael, Pa., snow and lowered temperatures with low pressure conditions, were recorded toward the end of the week of the explosion.

The two compounds that occur in coal mines in large enough concentrations to cause explosions are methane and coal dust. Dr. McIntosh reports that coal dust loses its moisture when a cold air front passes, causing it to be stirred up and dispersed into air.

In many major coal mine disasters the methane explosions occur first and are followed by coal dust explosions. According to Dr. McIntosh, this is because the peaks of highest concentrations do not coincide.

• Science News Letter, 82:407 December 22, 1962

MEDICINE

Some Headaches in Youth Due to Pain in the Neck

► ADOLESCENTS complaining of headache may actually have a pain in the neck.

The technical name is "occipital neuralgia," which can be treated with a plastic collar or surgery. The disorder results from instability of the joint between the first and second vertebrae of the neck, and is accompanied by reflex spasms of the back neck muscles, with neck pain and tension in the occiput, or bone in the back of the head.

Ten patients, ranging in age from 12 to the 20s, treated at the Children's Hospital Medical Center in Boston, showed similarity of symptoms that were verified by X-rays. Several had sustained injuries, including automobile accidents, a fall from a horse, being hit by a baseball bat. Others showed body posture to be asymmetrical with no previous known accident.

Drs. Mildred C. Dugan, Simeon Locke and J. Roswell Gallagher, who reported the cases in the New England Journal of Medicine, 267:1166, 1962, pointed out that all adolescents who complain of headache deserve a detailed medical history and thorough examination.

"Headache is so frequently the chief com-

plaint of a tense and anxious adolescent," they said, "that it is well from time to time to emphasize the many other factors both within and outside the central nervous system that can cause this symptom."

Even those who are anxious about their schooling, their parents, their acceptance by their own age group, their futures or their bodies, or one of the many other sources of worry for this group, should not be too quickly thought to have a psychosomatic disorder, the doctors said.

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MEDICINE

Heart Less Affected Than Lungs in Smoking

► THERE IS NO proof that hardening of the coronary arteries develops more rapidly in cigarette smokers than in non-smokers, laboratory tests in 989 autopsies on men have indicated.

Dr. Sigmund L. Wilens and Cassius M. Plair of New York Veterans Hospital, New York, reported in Science, 138:975, 1962, however, that they found lung cancer to be four times as common in heavy smokers of cigarettes as in non-smokers.

The relation between cigarette smoking and heart attacks could be indirect or even due to chance, the researchers said.

Heavy smokers may have other habits or characteristics that make them vulnerable to myocardial infarcts, coronary thrombosis, they pointed out. They said that chronic alcoholism was more prevalent among heavy smokers and that a high incidence of cirrhosis, or liver disease, in heavy smokers was also due to alcoholism.

"A sizable minority of heavy smokers of cigarettes seem to develop sclerotic changes in their aortas at a faster rate than non-smokers and tend to have higher blood cholesterol levels," they report.

The findings do not rule out the possibility that heart attacks due to coronary thrombosis may be more severe, and more often fatal in their acute phase, in heavy smokers of cigarettes than in non-smokers, they concluded.

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Do You Know?

Cesium-137, a long-lived radioactive material with a half-life about 30 years, may find extensive application in the future as a source of gamma radiation for industrial purposes.

Corrosion has become one of the most important factors involved in choosing materials for use in reactor construction.

White pine blister *rust* limits the reproduction of white pine in many areas by killing young trees.

A *vaccine* prepared from virus isolated from virus diarrhea, a disease of cattle, proved over 90 per cent successful during field trials in protecting swine from the virulent hog colera.

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