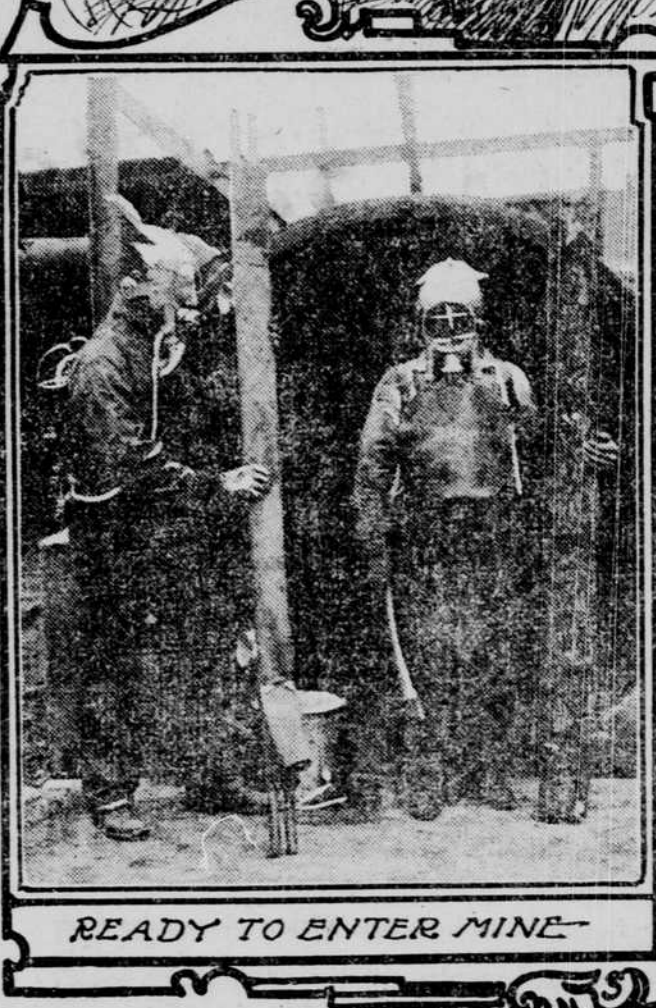


BALKING the GRIM REAPER in MINES

HOWARD E. SEXTON



READY TO ENTER MINE



of improper explosives, as well as the improper use of suitable explosives, results annually in the waste of great amounts of coal. The use of too high charges in blasting, or the use of unnecessarily violent explosives, shatters much good coal, converting fuel into dust which may itself be explosive and become productive of much further damage. Such explosions often loosen the roof of a coal mine, which may fall later to be wasted, or productive of fatal accidents.

In addition to the actual experiments in testing explosives, important experiments are being made in rescue work. One part of the station has been fitted up as a miniature coal mine. This is a large glass-encased, air-tight room which contains difficult passages such as are found in coal mines. There are also various obstructions similar to what would be found in a mine after it had been wrecked by an explosion; also dummies weighing 150 to 200 pounds, representing asphyxiated miners. This room is filled with deadly gas and a rescue corps of men who are being trained in the work enter daily, clad in helmets which supply them with oxygen while they work. The men remain in this chamber for two hours, removing obstructions, picking up the dummies, placing them on stretchers and carrying them away. There is also in the room a machine which records the amount of work a man may be expected to do while wearing one of these helmets. One-half of the large building in which this rescue room is located is used as an auditorium and several hundred miners and

IN ITS effort to stop the appalling loss of life in the coal mines of the country, the United States government is meeting with much success. For several months an experiment station, under the direction of the technologic branch of the United States geological survey, has been in operation at Pittsburgh, Pa., with the purpose of discovering the causes of mine disasters and suggesting a remedy.

Along with establishment of this station and the agitation which preceded the necessary legislation, there has been a falling off in the number of deaths in the coal mines for the year 1908, and while the official figures have not yet been obtained, it is stated that the number of deaths will be several hundred less than in 1907, which was an unusual year. In December, 1907, four

ergies to discover some method by which this dust can be prevented from being a serious menace to the miners. Experiments in wetting it have been going on for some time, but nothing of a very definite nature has as yet been learned, unless it is the fact that the coal dust does not ignite when there is a great amount of moisture in it.

Every effort is being made at the station to come as close to the conditions in a mine as



EXPLOSIVES GALLERY



RESCUE PARTY AT WORK

explosions took the lives of 700 men, one of them—at the Monongah mine in West Virginia—being the greatest mining disaster in the history of this country. There were 356 victims. During 1908, there were but two accidents in which the loss of life was very heavy; one in January at the Hanna mine, in Wyoming, with a loss of 70 men; the other, November 28, at the Marianna mine in Pennsylvania, which resulted in 154 deaths.

Already at the experiment station two discoveries have been made which will tend to decrease the number of deaths in the mines. It has been demonstrated that a number of the so-called "safety" explosives are anything but safe, in fact the statement is made that with the present explosives used in mining, the miner takes his life in his hand every time he touches off a fuse. It is the purpose of the government to continue these experiments until the explosives of the country are standardized in such a manner that the miner will have a definite idea what these explosives will do.



AFTER A COAL DUST BLAST

operators have watched the rescue drill through the large glass windows which separate the auditorium from the gas-filled chamber. Although there has been but little opportunity so far for the rescue corps to demonstrate its efficiency at the mines, still it has done some good work.

Once the helmeted men while fighting a mine fire succeeded in bringing an unconscious man to a place of safety, where he was given oxygen treatment and recovered his senses in a short time.

It is not the intention of the United States government to furnish rescue corps whenever there is a disaster. The present corps was organized with the idea of encouraging the mine owners and miners themselves to form such organizations. Invitations have been issued to operators throughout the country to send picked men to the experiment station, where they may watch the government rescuers at work and later go through the same training themselves, in order that they may gain the necessary confidence in the use of these helmets. Already a number of the large mining companies have taken advantage of this invitation and are organizing rescue corps at their mines, fully equipped with oxygen helmets.

In 1907 more than 3,125 men were killed in the coal mines of the country—a death rate of 4.86 for every 1,000 men employed. This is from three to four times as many men per thousand as are killed in any coal-producing country of Europe, where experimental stations such as the one in Pittsburgh have been in operation for several years.

possible. The tests of various dynamites and powders used in blasting coal are being made in a mammoth boiler plate cylinder which has previously been filled with gas or coal dust. The cylinder is 100 feet long and six feet in diameter. Safety valves have been placed all along the top and are left unfastened in such a manner that whenever there is an explosion the valves fly open on their hinges. A series of portholes on the side, covered with one-half inch glass, enables those conducting the experiments to witness the results from an observation house 60 feet away. An explosive mixture of fire damp and air, or coal dust and air, is pumped into the cylinder and the explosive which is to be tested is shot into it from one end of the cylinder, so that the flame goes right into the fire damp or coal dust. Natural gas is used at this station for fire damp, because it corresponds very closely to this deadly gas. The cannon in which the explosives are placed is fired by electricity from the observation house which is parallel with the cylinder itself.

These investigations are expected to accomplish a double purpose; not only a reduction in the number of men killed in the mines, but also a saving of the waste in mining coal. The use

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Full Beards for Farmers.

The protection of farmers and others who are exposed to the heat a great deal is a serious and difficult matter. Cancer is on the increase, and farmers furnish a large proportion of the cases, many of them being due to the direct effects of sunlight on the face and hands. A full beard for the farmer is most desirable for his protection.

DIET AND HEALTH

By DR. J. T. ALLEN
Food Specialist

Author of "Eating for a Purpose," "The New Gospel of Health," Etc.

"THE DIET CURE."

(Continued.)

You cannot go to church or the opera, especially in the winter, when less air and light are admitted, without admitting into your air passages, enough germs of consumption or of pneumonia or other germ disease, to send you to the grave, if the vitality of the blood is so low as to allow these disease germs to multiply so far as to develop the disease in virulent form.

Many of us have had consumption so far started, without knowing it, that post-mortem examination of our lungs would show that small colonies of the tuberculosis germ had started their work of destroying the lung tissue but had been overcome by the natural defensive powers of the system. And this applies to nearly every other disease. How often we read of death from the scratch of a pin or a nail, because the blood was in bad condition, the defenses weakened!

Some modern medical philosophers hold that the vitality is in the nerves, that, therefore, the secret of health lies in keeping the nervous system in order, and that, consequently, cure depends upon toning the nervous system, which they aim to do by soothing drugs, by mental influence, by electricity, by change of scene or by rest, or all of these.

It is true that all the physical functions are controlled by the mind, with the nerves as conductors of sensation carrying impressions from every part of the body to the spinal column and the brain, and carrying messages from the brain and spinal column to every cell in the body, with the sympathetic nerve system directly controlling the vital processes—digestion, pulsation, etc., subject to suggestion from the objective mind, which is constantly going on while we are awake—every thought, every mental picture influencing the body, sometimes so powerfully, as in fright, as to cause death; but the nerves are as powerless to act, of themselves, as are the wires from a battery to produce a current. They must be charged from the dynamo, the brain, and that requires a galvanic battery, with the blood as its liquid; and the quality of the current must depend, largely, upon the quality of the liquid, the blood. Unless the necessary elements are supplied to the blood and the waste removed death must, in time, ensue. Poisoned blood will no more support life than will worn out liquid supply life to a battery.

It is important, indeed, to treat the nervous system, and profound knowledge of physiology and of psychology are necessary to do this wisely, but the material vital supply must come from the food. Proper feeding is the prime condition of a sound nervous system. Let a child be ill nourished, pre-natal, or post-natal, and you have a weak, "nervous" child, but feed a child well (avoiding the almost universal error, too much food) and it is vigorous in every way.

"Cold" is a form of congestion, as, indeed, every disease is, in a sense, congestion; resulting, primarily, from bad feeding, including defective elimination.

Diligent searchers after disease germs have at length discovered a germ to go with pneumonia, the grip and, as was to be expected, with each kind of "cold," a great variety. Now germs play a very important part in the causation of disease, a part as important, at least, as the common house fly plays in the causation of filth. It is worthy of note, that the typhus fever germ has almost disappeared, because the degree of filth necessary to entertain that festive bug has been relegated to a semi barbarous age.

The blood is circulated through every tissue by the vital impulse of the nervous system, which controls the expansion and contraction of the heart and the arteries, as it controls every other vital function. If the temperature of the body be suddenly lowered, contraction of the minute blood vessels at the surface of the body results, driving the blood inward and away from the extremities.

Now if the circulation is free and easy through all the tissues, if the system is not clogged by the waste from imperfectly digested food, and if the nervous energy is high, and not abnormally sensitive, the balance of the circulation and nerve supply are easily restored, but if the circulation is sluggish and vitality low, a more or less permanent congestion results; we have a slight or a severe "cold," showing chiefly in the head, the lungs, the throat or congesting the kidneys and precipitating rheumatism, if the system is predisposed to rheumatism by improper food and sluggish circulation or, if the vitality is very low, as in the aged or the inebriate, pneumonia may result, even without any record of a distinct chill, or, if there is an hereditary predisposition to consumption, that dread disease may gain a foothold.

The blood thus leaving the surface

of the body, the pores of the skin are more or less closed, and the work of the skin, which is to throw off a large part of the waste of the body, is imposed upon the lungs and the kidneys. The functioning of the nervous system is also unbalanced, which contributes to the same result. The action of the interior skin, that is, the mucous membrane of the air cavities, and of the alimentary tract, is disturbed, on account of sympathy with the outer skin; it is congested. The lining of the interior of the body is but a continuation of the outer skin. It is for these reasons that there is an extraordinary discharge of mucus, often general, when one is suffering from cold, and, with the extraordinary congestion, closing the pores of the skin, to a large extent, and the increased waste of tissue, due to fever, the urine contains more waste.

The purpose of the fever is to burn up the waste matter in the system; it is a natural curative process, and to "cure" the fever except by doing the same thing that nature is doing by the fever and thus render the fever unnecessary—to stop or lower the fever by quelling it with anti-febrile drugs is always to combat the cure, and is sometimes extremely dangerous, as in pneumonia in a vigorous, full-blooded man. Blood-letting, a therapeutic agent now relegated to a barbarous age, though often "indicated," is far more scientific than that—but lack of space forbids an interesting explanation here.

To stop a cough by drugging is equally irrational, as a rule. The cough is a curative measure.

If the fire bell were to sound on a cold night in a hotel where every guest knew that a quick run down a long, cold hall, would bring him to a safe place—not warm, but safe—few or none would "take cold" by making the run and back immediately, barefoot and protected only by a night robe, (even though they might encounter millions of influenza and pneumonia germs on the way), but let a dozen of the same people discover on awakening quietly, that they must walk through that same long hall, barefoot and protected only by a night robe and many of them will contract cold, one tonsillitis, another influenza and perhaps one (a senile inebriate) even pneumonia. Almost every reader must have seen the result of this, so I shall pass at once to the conclusion: Don't fear that every draft will give you cold; set your mind against taking cold, but don't choose to sit in a draft. Keep moving when you are exposed to an unusual degree of cold; tense mind and muscles, walk fast. The atmosphere in ill-ventilated rooms is poisoned and the system is far more likely to be overpowered than by even a slight draft than it would be in cold but pure air in the open. No poison, no "cold," no pneumonia, even at 20 below zero, with the ears and fingers freezing. Grip, or common influenza is "catching" in a poisoned, "close" atmosphere, and where it finds lodging in a body laden with poisonous matter from unexcreted waste of superfluous food, it may become firmly established and lead to serious consequences. The germs of influenza, consumption, or pneumonia are always at hand, like vermin, ready to perform their office.

Those who hold to the theory that the germ is the prime cause of cold, say that a draft or wet feet or a drenching cold rain, may be ignored, if we can only avoid the germs, but it is a physiological fact that extreme heat and cold affect every living organism, even when conditions are otherwise normal. I formerly suffered much from tonsillitis, but not since I understood and applied the theory of osteopathy, that disease is due to interference with free circulation of the nerve energy and the cure, "take off the pressure"—that is, relieve the congestion—a theory that finds useful application often, even though it is only part of the truth. Osteopathic treatment is especially indicated in pneumonia even where there are no "bones to set" and aside from massage, which is also beneficial, but it is no more wise to treat pneumonia by osteopathy alone than to treat it by drugs alone or by "science" alone.

An old physician says that he has noticed, for many years, that pneumonia sets in more frequently at the beginning of the week, than at the end. This is undoubtedly because people as a rule eat more heavily on Sunday, so that the vitality is more absorbed in eliminating waste matter, leaving less to resist the attacks of disease and also because, in winter and spring, people are more indoors on Sunday.

Some authorities name among the predisposing causes of pneumonia, under-feeding. Manifestly the prime cause is defective nutrition, with exposure as the existing cause and the germ as the incidental or secondary cause. Improper feeding, most frequently eating too much or eating the wrong food, is usually the prime factor in the mal-nutrition predisposing to pneumonia or "cold." (If a meal has been eaten within two hours) cannot and rubar; stop eating till you are sure that normal conditions have returned, resuming with acid fruit, fresh if possible, after one or two days or longer in serious cases. Sit with the feet in hot water up to the knees for half an hour, adding hot water as the bath cools. When the stomach settles, drink as much lemonade (no sugar) as possible. While sitting with the feet in bath or reclining have a cold pack about the head and neck. Have thorough massage and osteopathic treatment and a vapor bath and, in ordinary cases, no cold or pneumonia will develop.

Don't yield to the inclination to eat ravenously; the appetite is not natural. There is a rapid burning up of waste matter, but that should go on without interruption, whereas a heavy meal will interfere with the cure. "Feed a cold and you'll starve a fever" (later), the popular maxim should read.

Fever is a beneficial process; it is nature's house cleaning. To stop it by depressing the action of the heart is always wrong, often fatal.

The high temperature, as in pneumonia is prolonged by the poisonous matter generated in the blood by the pneumo coccus pneumoniae, the specific germ of lung fever, degenerated blood being rapidly poured in upon the heart, but to refrain from adding fresh poison by eating when the stomach cannot digest and to keep the alimentary canal clean and clear and to furnish plenty pure air at the lowest temperature to burn off the waste in the blood and vivify it with oxygen—this is simple but effective, always.

Because I have not space enough to give the natural treatment for pneumonia, and because it is advisable always to have a physician, in serious cases, whose instructions should be followed implicitly, I shall give only the treatment which will apply to any

form of cold, and to the initial stage of pneumonia.

This treatment is clearly indicated by a proper understanding of the true causes of cold or congestive chill, including pneumonia, and by a proper understanding of the effects of such chill and the means by which nature can be assisted in restoring the normal condition—that is, the condition in which all the powers of nutrition are performing their respective functions naturally, the condition of health.

The essential primary factor in the causation of common cold, consumption and pneumonia, is defective feeding and it must follow that the natural diet, simple but nourishing, is the most important means of prevention.

I know a man who can break the ice in the river in winter, and take a plunge bath and be none the worse the next day. If the average healthy man were to fall off a city bridge and break through the ice, the danger would be not pneumonia but the result of the mental and physical shock. If he were quickly landed without physical injury, and immediately run to an adjacent hotel and have a brisk rub with a Turkish towel, and then dress at once, and feel that he was none the worse, the effect would probably be the same as in the case of the man who voluntarily can take a river bath in January, but in no case is this advisable. It indicates, however, like the example of the hotel guests, an important means of prevention, which everybody should follow in varying degree according to age and strength, in winter. It also indicates the serious mistake of preparing for a cold, grip, or pneumonia, by hugging the stove continually or remaining closely in an ill-ventilated, dark, steam-heated, carpeted room. The temperature of the sleeping room should not be above 50. It is best to breathe out-door air, whether one is in average health or suffering from pneumonia.

The farmer's boy who 50 years ago saw the stars shining through the roof when he awoke in the morning after a severe storm in February, with a blanket of snow around him, was not addicted to catching cold as much as we who think we must hear the steam hissing before we venture to expose our hands or feet.

On awakening in a temperature of 30, we can at least be sure that although the nose and ears may feel cold, there is no danger of catching cold. The Indian, asking why he did not catch cold like the white man, said, "Me all face." If we can extend this immunity to the arms, then to the legs and then to the entire body, and maintain it, we shall have a permanent defense against the exciting cause of "colds" including pneumonia.

Rub the arms, alternately extended, uncovered, vigorously, for five minutes, then neck and chest. When a glow has been induced in the upper part of the body, jump from bed and begin to rub the legs, vigorously, alternately, with the hands, till a glow has been secured, all the time breathing deep and fast. Next begin to rub briskly the trunk in every part that can be reached, going to the extremities when a tendency is felt to chill, thus keeping the circulation equalized. Follow ten minutes of this exercise with movements exercising every muscle in the body, flushing the small arteries in every tissue. Then begin with a wet towel, rubbing vigorously the extremities and then the trunk, finally removing the robe and ending with a dry Turkish towel rub. This may take 30 minutes, but it will be the most profitable investment of the day. It may require weeks' or months' gradual approach in a mild temperature before this full program can be carried out in a freezing temperature but the effort will be repaid many times. With a walk of five miles daily, this will supply ideal physical exercise and be an insurance against disease, if the proper food is eaten and the mental conditions right.

If these preventive measures are neglected, the nutrition is bad and a severe chill takes place, threatening perhaps pneumonia: Fresh air first, the colder it is the quicker it will burn off the waste, relieve congestion and give life to the blood by furnishing oxygen. Empty the alimentary canal as quickly and completely as possible, by emetic, (if a meal has been eaten within two hours) cannot and rubar; stop eating till you are sure that normal conditions have returned, resuming with acid fruit, fresh if possible, after one or two days or longer in serious cases. Sit with the feet in hot water up to the knees for half an hour, adding hot water as the bath cools. When the stomach settles, drink as much lemonade (no sugar) as possible. While sitting with the feet in bath or reclining have a cold pack about the head and neck. Have thorough massage and osteopathic treatment and a vapor bath and, in ordinary cases, no cold or pneumonia will develop.

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NO ROYAL ROAD TO EDUCATION

Successful Student Must Be Called Upon to Make Effort.

"Do all you can," urged President Eliot in a recent address, "to influence, each in his own community, the raising of the standard of instruction in high schools." He added, also, private schools. But these do not concern us, nor the public, comments the Boston Herald. We believe with Presi-

dent Eliot that the American people will be likely, in the future as in the past, to value a thing largely by what it costs, not cost in money only, but by what it cost in effort.

Education is a result of effort, not of inspiration, and the greater part of effort must come from the student, whether he be in the grammar school, the high school or the university. It is a mistaken idea that education should

be made easy, that mediocrity should set the standards of the courses of the schools, but it is a current idea, and too limited to any city. Authority is not much inclined to provide bargain-education. There can be no bargain. There never has been a royal road to education, and there never can be one. But the belief that one exists, and that a smattering of many things is good enough, has served to cover the country with myriads of lives more or less content with superficial views and achievements, and the appearances of

things. That is the penalty the public pays for bargain education.

The Realm of the Possible.

"The realm of the possible was given to man to hope, and not to fear in. . . . If (in sorrow) the thought strikes you that we are punished for our sins—mourn for them, and not for the happiness which they have prevented. Rather thank God that he has stopped us in time, and remember his promises of restoring us if we profit by his chastisement.—Charles Kingsley.

Girls May Sit on Beau's Knees

Cleveland, O.—In a decision in which no names were used, Judge Adams of the juvenile court ruled that a girl may sit on her beau's knee without fear of interference by the law.

An excited parent demanded the arrest of his daughter. "She is 16," he said. "I came down-stairs at 11:30 o'clock last night and found her sitting on a young man's knee, her arm around his neck. I told her to go to bed at

once and ordered the young man away. She kissed him good-night before my eyes. I want you to awe her."

"There is no law by which I can interfere," said the judge. "No court would attempt to interfere with a girl sitting on her beau's knee."

Baby Pianist Is Marvel.

Leipzig.—This city is boasting the world's greatest child musical prodigy

In Pilar Osorio, a three-year-old girl, in a piano recital before an audience of critics, she played the most classical selections perfectly. She plays wholly from memory. Her case has excited so much comment that arrangements have been made for a scientific commission to examine the girl and her ancestry in an effort to find the source of her talent. The girl's parents have accepted numerous engagements for the public appearance of the child, but it is likely that her exploitation at such a tender age will be prevented on humanitarian grounds.