

Progress in Science.

An Automatic Railway Safety Stop.

SINCE the terrible catastrophe on the Berlin Elevated and Underground Railway caused by a train running by a stopping signal, the German railway administrations have been giving increased attention to automatic braking devices for preventing the recurrence of such accidents. The apparatus illustrated has been adopted provisionally, and is now being tested out. Its object is to warn the engineer and fireman by visible and sound signals and set the brakes, all being done simultaneously.

The safety device consists of contact levers mounted on the locomotive, and pedal contacts arranged on the track. The former are always arranged on the right-hand side of the engine, and are actuated by a permanently tightened spiral spring. In the interior of the cab is arranged in a conspicuous position the repeating box, which is intended for indicating to the driver (1) whether the

whistles. The same siren is used as a braking signal in the case of brakeless goods trains. At each distant signal there is arranged a single pair of track contacts, and at the main signal, two pairs, situated about 30 metres apart. They are so connected with the signals as to be lifted when the signal is closed, thus protruding beyond the rail head and coming into contact with the sliding levers of the locomotive, whereas, in the event of the signal being drawn, they are located below the rail head, so as to avoid any contact.

In addition to these stationary pedals, movable pedals are provided, which are readily fitted behind fish-plates, with a view to warn and stop trains at any point of the track.

The Transandine Railway.

Toward the close of last year the four-mile tunnel through the Andes on the line of the new transandine railway

earlier they might have saved a large number. The cost of expert direction in accidents would not be very great, and it seems as though, if we protect our coasts by guards, we might also do something to protect our miners. A few men who are specially fitted could be organised and drilled in each district, and the mineowners themselves might be made to furnish the necessary equipment, which would not be a very great tax on any operators.

Moving Picture Photography.

Lendenfeld has made moving pictures of the flight of insects, with exposures of 1/42,000 second. **Cran** has made a kinematograph study of the action of weapons and projectiles, employing for illumination electric sparks of a duration of one ten-millionth of a second, and obtaining pictures of 400 successive phases of the operation of the firing mechanism of an automatic pistol, although the entire operation occupied only about one-tenth of a second. On the other hand, **Kohler** has made a series of Röntgen ray photographs of the movements of respiration, the time of exposure of each photograph being 15 seconds, during which the breath was held. The photographs, after suitable reduction, were joined together in a continuous strip, which when used in connection with a kinematographic projecting apparatus, gave a moving picture of the respiratory process.

Railway Accidents in the U.S.

The number of railway accidents during the year ending June 30th, 1909, in the United States was 66,711, or 2791 killed and 63,920 injured. This is a decrease in the total number of 6042, or 973 killed and 5069 injured, as compared with the number reported in the previous year. Even the reduced figures do not speak very well for the safety on American railroads.

The Proposed New Mail Service.

Arrangements are being made to consider proposals for a fast passenger and mail steamship and train service from London to Australia and New Zealand by way of Canada, and an 18-knot service on the Pacific. The subsidy aid which would have to be given by British colonial governments would be very heavy. The Australian Government demurred at first, but has finally agreed to share in the cost, and a conference will meet in London about May next to consider the details and apportion the cost.

New Egg-preserving Process.

In a new process of keeping eggs in cold storage, 500 eggs are packed in a tin box, and a little calcium chloride is added to ensure dryness. A lid, having a hole 1.5 inch in diameter, is then soldered on, and the box, with a number of others, is placed in a large iron cylinder, from which the air is then exhausted. By this operation the air and carbon dioxide dissolved in the albumen are removed, as well as the air which surrounds the eggs and fills their voids. The cylinder is next filled with pure carbon dioxide. A certain quantity of this gas is next withdrawn from the cylinder and replaced by nitrogen, obtained either from the cylinders in which it is sold in a compressed state or by passing air over red-hot copper. When the eggs have become saturated with the mixture of gases, the boxes are removed from the cylinder, sealed, and placed in rooms where the temperature is kept between 32 and 36 deg. F. By this process the eggs are kept in an atmosphere which contains no free oxygen, and in which the proportions of carbon dioxide and nitrogen are the same as exist in the albumen of fresh-laid eggs.

Spray Helmet for Firemen.

Firemen frequently find it necessary to play the hose on their fellow firemen to protect them from the intense heat of the conflagration which they are fighting. Borrowing from this idea, an inventor has devised a helmet formed with a spray nozzle, which is connected to a small hose line. The water spouts out from the nozzle in all directions, causing a miniature cascade around the body of the fireman, enabling him to attack at close quarters fires that would be undurable under ordinary conditions.

Airship and the Arctic.

Professor Hergesell, Count von Zeppelin's mathematical and meteorological adviser, states that two airships will be used by Count von Zeppelin with a view to exploring the entire region within the Arctic Circle. One will probably be left at a relief station in Spitzbergen while the other is on its journey, the two keeping in touch by means of wireless telegraphy. The German Government will undoubtedly aid the undertaking financially.

An Enormous Schooner.

There has recently been launched the largest wooden vessel ever built in the United States. The Wyoming, as she has been named, is a six masted schooner of 3730 gross tons, with a total length over all of 350ft. Next to her in size among wooden vessels is the William L. Douglas, with a gross tonnage of 3703.

An Army of Employees.

The great shops of the Pennsylvania Railroad Company at Altoona, employing 12,000 men, are now working full time. This is the first time since the financial depression of 1907 that all departments of the great shops have been operated.

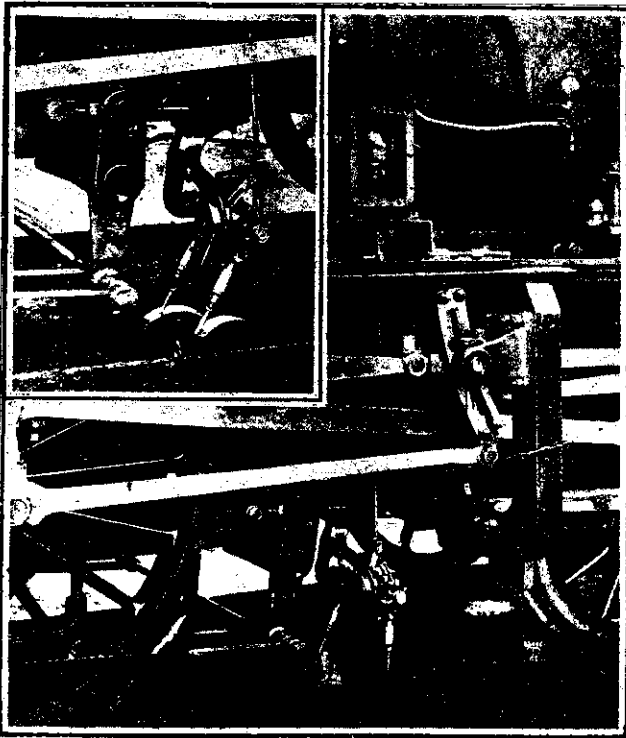
BABY'S TENDER SKIN.

IRRITATING RASH ON BODY AND ARMS SOOTHED AND CURED BY ZAM-BUK.

The first few months of a baby's life are extremely trying. Serious rashes and eruptions, especially after vaccination, during teething, at the change of food, and at other crises, are troubles with which every mother has to contend, and Zam-Buk will be found a boon to the suffering infant.

Mrs. M. Pittard, of 27 Giffard Street, Williamstown, Vic., says:—"I cannot sufficiently express my gratification in the manner in which your famous Zam-Buk cured my baby, aged five months, of a very bad rash on her body and arms. When the rash first appeared, I took the little one to the lodge doctor, who told me it was a teething rash, and gave me a lotion to apply. The relief gained, however, was of but short duration, for as soon as the little one was in bed the rash became bad again, making the child terribly fretful and restless. I did not know what to do, until one day I obtained a sample pot of Zam-Buk, and applied it. To my delight the first application gave her much ease. She ceased to scratch at the rash, as she had previously done, and slept peacefully at night. After only two pots of Zam-Buk the whole of the rash had completely gone, and baby's skin was as fair and smooth as ever."

Zam-Buk is unequalled for all injured, unhealthy, irritated, inflamed, and diseased conditions of the skin. 1s. 6d. and 2s. 6d. per pot, of all chemists and druggists.



UPPER ENGRAVING SHOWS CONTACT APPARATUS IN OPERATION. THE LOWER ENGRAVING SHOWS CONTACT OF SINGLE LEVER WITHOUT EFFECT.

track is disengaged; (2) which signal has been passed over; or (3) that the apparatus is out of order; the various indications being signalled on a red background inside a white frame, immediately before the engineer's eyes.

Above this repeating box is arranged a recording box, which mainly contains a clockwork, which is actuated by the train runs by some signal. The clockwork sets a roller and paper tape rotating, and thus causes a dash or dot to be inscribed. Furthermore, the engine driver is free to produce, on the same paper tape, before passing the signal, an annular mark, showing the signal to have been duly attended to. These marks may serve as useful records in the case of lawsuits.

On the roof of the driver's stand is mounted an alarm siren, the howling sound of which is readily distinguished from that of ordinary locomotive

between Chili and Argentine was broken through. The tunnel lies on the Chilean side of the boundary line between the two countries, and forms the summit of a new single-track road. It is expected that the tunnel will be completed and the whole line opened in the spring of the present year.

Life-saving Corps for Mines.

The recent deplorable mine accident at Cherry, Ill., in which there were hundreds of deaths, brings up the question of expert direction in such disasters. Untrained volunteers are entirely useless, as was demonstrated in France a couple of years ago, when about 20 rescuers went down in a mine to their death. The expert life-savers from Westphalia mines, who were sent by the Kaiser, with their tested ropes and other tackle, came too late, but their work demonstrated that if they had been called in



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