Marvels of Everyday Science

Competent Scientists Apply Their Skill to Problems of Agriculture, Houskeeping, Schools, Business and Governmental Activities.

AN "AUTOMATIC flagman" for railway grade crossings—an apparatus that in addition to ringing a loud gong at the approach of a train, waives a red disk by day and a red light by night—has been devised. It is operated by a small motor, which receives its energy from storage batteries, lighting circuits or trolley circuits. On steam roads the track is insulated and bonded for the desired distance away from the signal and is charged with current from a small battery. The train on entering the block completes the circuit and operates a relay which connects the motor with the power circuit. When the train leaves the block the circuit is opened and the motor disconnected. Several hundred of the "flagmen" are in service on the lines of the Pacific Electric Railway, of Los Angeles.

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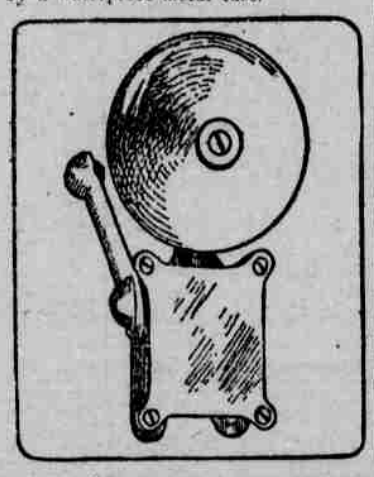
Waterproof Case For Bell.

The accompanying picture shows a bell with its working parts protected by a waterproof metal case.



A peculiar appearance is given to the bell by the hood which shelters the metal tapper and its arm.

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Electric Driven Ships.

Coal driven and oil driven ships are to be followed, it seems, by ships operated by electricity. The fireboats of Chicago are both propelled and steered through the crowded Chicago river by electricity; there is the new electric driven United States navy collier Jupiter, and the ship Tynemount, recently completed in England and destined to ply the waters of the great lakes of North America, is one of the largest vessels of this type. The advantage of electric propulsion, is greater flexibility of control and the possibility of manipulation from the bridge.

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Electricity From Coal Mine.

In the production of coal of commercial sizes, the Lehigh Coal & Navigation Company, which owns large deposits in the Mauch Chunk and Tamaqua regions of Pennsylvania turns annually enough coal refuse to maintain a 125,000 hp electric plant in continuous operation. The culm has no marketable value because it would not bring enough to pay for its transportation charges. To utilize this refuse fuel from the breakers and washeries and have it perform some commercial and economic service instead of dumping it on a heap to mar the beauty of the scenery in that portion of Pennsylvania known as the "Switzerland of America," the Lehigh Navigation Electric Company has erected a huge generating station at the mines. This plant will have an ultimate capacity of 125,000 hp and transmission lines have already been designed to carry the electricity generated at 110,000 volts to distant parts. In the present state of the art, the whole state of New Jersey and the immense cities of Philadelphia and New York are within commercial electric transmission distance. Fuel being the largest single item of expense in the generation of electricity from steam, it will be evident that the immense station at Hauto will be able to manufacture electricity for considerably less than it is being turned out in the great majority of water power plants throughout the country.

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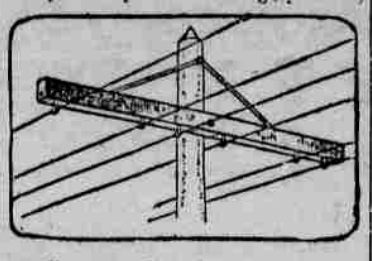
Insulator For Phone Line.

The Scientific American in describing an insulator, invented by O. C. Meusebach of San Antonio, Texas, says: The more particular purpose of the inventor is to provide an insulator suitable for use upon telephone and telegraph lines,



as well as upon lines for general service of various kinds, a special object being to improve the insulation of the line and at the same time to render the construction comparatively clean, simple, and in many ways efficient.

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Reaching Railroad Wrecks.

When a train is derailed it is the job of the wrecking crew to put the line back into service in the quickest possible time. Every minute counts and to reduce the period of a tie-up the New York Central has placed in service a specially designed, self-propelled wrecking car, capable of picking up a load of 100 tons and swinging it clear of the tracks. Former wreckers depended upon locomotives to haul them to the scene of an accident, but by providing the new apparatus with its own motive power an hour's delay is eliminated. It is possible to run the wrecker either from a third-rail or from storage batteries. Thus if the third-rail power were shut off for some reason the wrecker could still reach its destination by running on electric current from its own batteries. There is a cab at each end, from which is controlled not only the corresponding boom, but also the propelling mechanism of the car itself. Thus the wrecker can be operated equally well in either direction from either end, and no time need be wasted in turning it. All motions are controlled by air and no heavy levers are required.

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Life Preserver That Fits the Neck.

A cork life preserver which fits around the neck rather than under the arms and is designed to support even

an unconscious person has recently been placed on the market. The advantage claimed for the new life-saving device is that it does not permit the body to overturn and keeps the head above water under any circumstances. The life preserver is made of block cork covered with cotton drill and has underarm straps arranged so that the body's weight is carried from rust-proof burrs on top.

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Chinese Wheelbarrow Hauls Load.

A barrow with a wheel as big as that used on a wagon is used in some parts of China, and loads of considerable weight are hauled upon it. The box or

bed of the barrow is divided, so that the wheel occupies the central space, the load being piled or fastened on either side. Such well-balanced loads as that shown in the illustration are not uncommon.

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Street Farrier.

On the streets of Paris is seen a portable smithy which does a profitable business during the winter. The farrier takes his tools with him on his tours through the streets, and finds his customers in drivers who find that a horse has cast a shoe or that weather conditions call for sharpened calks.

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Fire Engine as Heater.

When the regular heating plant of a Mississippi railway station was put out of commission by reason of damage to the boiler, an old fire engine was coupled to the heating coils of the station, and a comfortable temperature maintained without difficulty. Pipes were run from the boiler of the fire engine to the mains in the basement of the station and steam was sent to all radiators until the regular boiler was in commission again.

Health and Sanitation

The care of teeth is one of the most important features of a person's daily life. For that reason Dr. Jones' remarks are well worth while.

BY DR. M. A. JONES.

THE first process of digestion is performed in the admixture of the food substance with a fluid secreted by the salivary glands during mastication.

This first step in the conversion of food in to flesh and blood, is a most important one, and the pleasures attending the sense of taste are doubtless given to insure a proper performance of this initiatory process of a transformation.

If food is not well masticated, the stomach cannot perform successfully the second stage of digestion, and the disastrous effects of mal-assimilation will soon be apparent, affecting in some degree the whole body.

Many dyspeptics, and persons suffering from nervous conditions are really victims of mal-nutrition due to careless habits of mastication or the inability to properly prepare their food for reception by the stomach.

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THE influence of good roads on public health is a point in their favor that has not received much attention. The Kansas state board of health puts the feature in the foreground and wants modern improved roads in that state because they prevent disease.

They do this because they afford drainage. A good road can never remain a good road unless it is well drained. The roadbed must not have any standing water either on its surface or below the surface. It must have drainage, and the gutters beside the roads must have slope and be kept free from obstruction, so that all surplus water can escape quickly and easily.

An old-fashioned, ill-drained road, with its frequent pools of standing water on the road or by the roadside, with its ditches filled with weeds, brush and all sorts of trash, is a breeding place of insect life. Mosquitoes, flies and other insects, such as chinch bugs and grasshoppers, multiply there in profusion. It is these insects which either carry disease or are of the kind which destroy the farmers' crops. For these reasons well-built, well-drained highways are a double benefit since they give the farmer the inestimable advantage of easy communication with his market at all times of the year and by improving the drainage check the breeding of harmful insects.

Good roads mean, therefore, not only a great saving of time and labor for the farmer, but the improvement in the hygienic conditions of the farming community. He is brought nearer to his market, the hauling capacity of his teams is greatly increased, and he is no longer marooned on his farm for many weeks each year owing to the impassable conditions of the roads. That health is promoted as well as comfort and wealth by good roads should give the argument for their construction irresistible force so that their building shall not cease until the whole country is lined with them.

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AS A RULE, it is well to dry-clean the scalp as much as possible; and it is surprising how clean the hair and scalp can be kept just by thorough and regular brushing and currying alone. The most important detail about the washing of the hair is that it should be rubbed or brushed until thoroughly dry. If this is done, in the short hair of men there is no objection to wetting it daily or even two or three times a day if desired. The risk of leaving it not perfectly dry is that the natural oil of the hair, when mixed with water, rapidly decomposses or ferments, with the production of the all-too-familiar and none-too-pleasant sour or half rancid smell of badly kept hair. This condition both irritates the scalp and furnishes a fine culture medium for germs which thereupon promptly sweep in and give rise to the commonest form of dandruff or scaliness of the head.

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THE use of milk and eggs as a diet or an aid in building up a patient is often a trial for the nurse. Many patients will take milk slightly warm, or even hot, and digest it readily, when cold milk causes distress. It is an excellent idea to rinse the mouth with cold cool, or hot water, as preferred, before and after drinking milk. The taste left in the mouth of many persons after a drink of milk, especially a small quantity, often causes the patient to dislike it.

The secret of success in giving milk and eggs to those who would rather not take them is to prepare them in different ways. For a delicate stomach the white of an egg, well beaten, added to hot or cold milk, sweetened to taste, will often prove tempting, when even the sight of the yolk with milk is unpleasant. At a time a little of the yolk may be used, the white of the egg being added last, and not stirred into the milk, but left on the top of the glass for ornament.

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THE morning cold bath is not a cleansing bath, but a stimulating bath. Following the plunge into the cold water should come a lively rub. If the afterglow is not good, the cold bath does no good.

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