THE GATHERER:

AN ILLUSTRATED RECORD OF INVENTION, DISCOVERY, AND SCIENCE.

Correspondents are requested, when applying to the Editor for the names and addresses of the persons from whom further particulars respecting the articles in the GATHERER may be obtained, to forward a stamped and addressed envelope for reply, and in the case of inventors submitting specimens for notice, to prepay the carriage. The Editor cannot in any case guarantee absolute certainty of information, nor can he pledge himself to notice every article or work submitted.

A New Cash Recorder.

The "Champion" cash register which we illustrate is intended to replace the ordinary till where money is

paid for goods sold, and to record the purchase, thus preventing overcharges on the part of the salesman. The machine is only nine inches square at the base and stands on the counter. In a central oval space the amount of the purchase is written in figures, which can be seen by the customer at a glance. Each assistant has his own register, and it is therefore possible to fix any error on the proper person.

Buildings of Steel.

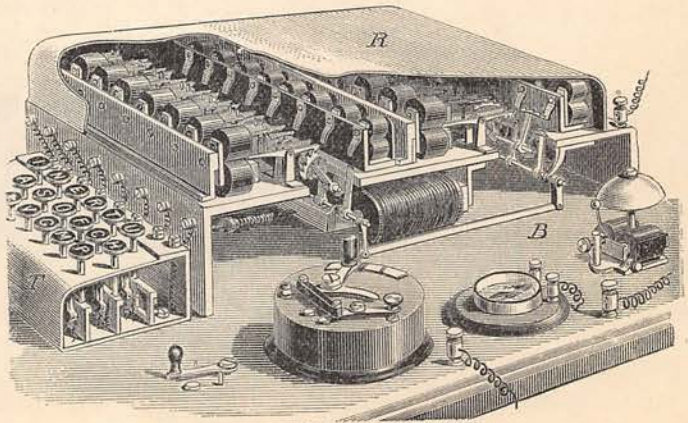
Large buildings such as churches, schools, and colleges are now constructed of iron and steel, and they can be made of handsome appearance. Strength is obtained by making the walls double, and the air of the hollow interior acts as a non-conductor of heat. Such buildings are easily put up and taken down, and they are well adapted for an earthquake country. Moreover, the hollow walls admit of electric wires and pipes being run to any part of the house.

Type-Setting by Telegraph.

The type-printing telegraphs hitherto in use have corresponded to the "single-handed" type-writers; but Mr. Donald Murray, of Sydney, New South Wales, has introduced a new apparatus, which corresponds to the "double-handed" typewriter, and admits of about double the speed of transmission: that is to say, some eighty words a minute. Moreover, the same instrument serves as a long-distance typewriter, a type-setting machine, and an electrical piano. The apparatus is illustrated in the accompanying figure, and without entering into details we may state that when one of the transmitting keys, T, seen on the left is depressed by the operator, a particular combination of electric currents, positive and negative, is sent into the telegraph wire. In passing through the receiving apparatus at the other end of the line (a duplicate of which, R, is attached to the transmitter and forms the body of the figure) these currents excite an electro-magnet corresponding to the key and actuate the proper printing type. There are thirty-two transmitting keys and thirty-two receiving types, as well as a call-bell, B, and other auxiliary devices which we need not specify. The message is printed in ink on a travelling strip of paper, as in the ordinary Hughes typewriter, so largely used on the Continent and at home. Obviously such an apparatus can also be used as a typewriter at a distance, and, indeed, to work any keyboard instrument such as a piano or type-setter. It is, therefore, within the bounds of possibility that a reporter, say in Parliament, will be able to discard his shorthand notes and set up a speech in type as he listens to it.

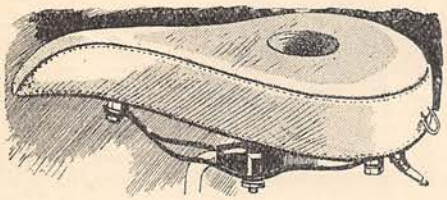
A Pneumatic Cycle Saddle.

For the greater comfort of the cyclist a pneumatic saddle has been introduced, which we illustrate herewith. The saddle is composed of indiarubber membrane, covered with leather, and inflated by the tube



TYPE-SETTING BY TELEGRAPH.

and valve shown under the seat. It weighs only 1¼ lbs., which is less than the ordinary saddle, and it affords a soft, steady, and secure seat. While upon this subject, we may add that Mr. William Doig



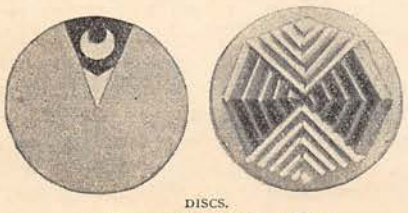
has endeavoured to obviate the drawbacks of the pneumatic tyre in cycles by introducing a pneumatic hub instead. His idea is that the pneumatic principle is more correctly applied at the hub : in short, that the axle of the wheel, not the flange, should be cushioned in air. By the pneumatic hub he expects to get an equal speed and comfort from the machine, and to treble its duration.

The Phonograph in Schools.

The Edison phonograph, which has been used with good effect in preserving aboriginal languages now dying out, and, according to Dr. Garner, in registering the speech of the lower animals, particularly of monkeys and gorillas, has now been adopted in some American schools to assist in teaching languages. A number of pupils may record their lessons on the cylinders one after another. These can be examined by the teacher at his leisure. Similarly the teacher may record a lesson on the phonograph, which the pupils can hear and study while he is otherwise engaged ; and in the same way he can verify the recorded speech. It is easy to see how foreign languages can be self-taught in this way, by using a proper series of graduated exercises. By means of the flexible tubes as many as thirty pupils can be instructed from the same phonograph. Apparently there is a future before this method of tuition.

A Reflecting Kaleidoscope.

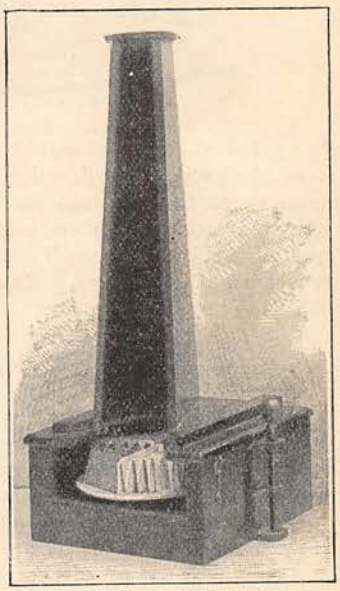
A great improvement has been made in the kaleidoscope, that interesting device for pleasing the eye with changing patterns of divers colours. Mr. John Gorham, M.R.C.S., has invented a reflecting form of the instrument, which gives a surprising number of the most beautiful combinations with simple arrangements of coloured paper or the petals of flowers. As shown in the illustration, it consists of a mahogany box containing a disc having coloured objects of angular or other forms placed upon it. A kind of funnel half open and lined with two mirrors, rises from the box, and the observer looks down the funnel through the eyehole at the objects while he slowly rotates them by turning the peg. The eye sees the objects and also five reflections of them, forming an intricate and beautiful figure which keeps changing while the peg is turned. Further varieties of tint and form are given by inserting a second disc in the line of sight at the base of the funnel.



DISCS.
(A REFLECTING KALEIDOSCOPE.)

Hot Disinfectants.

MM. Chamberland and Fernbach, two well-known French *savants*, have recently found that disinfecting solutions of hypochloride of soda, chloride of lime, and peroxide of oxygen are much more effective when applied at temperatures of 40° to 50° Cent. (104° to 122° Fah.). This agrees with a prior observation of Heider for disinfectants in general. The Frenchmen, however, have also discovered that microbes are more easily destroyed by disinfectants when they are in a moist condition, and they suggest that the walls of a room should be sprayed with water before applying the disinfectant. A cheap practical disinfectant recommended by them is made by "drawing" one part by weight of chloride of lime with ten parts of water and diluting the clear extract with ten times its volume of water.



A REFLECTING KALEIDOSCOPE.

Intelligence and Weight in Children.

It appears, from measurements made in the public schools of St. Louis, U.S.A., that on an average the clever children are also the heaviest and tallest, besides having the widest chests and largest heads. In short, a good physique and a good mind generally go together ; but not always. Moreover, the difference in point of body between the clever and the dull children increases as they grow older. It follows that if a child is below the average weight for its age it should only be moved into a higher standard at school after it has undergone a physical examination, to see if its strength will be equal to the increased strain.

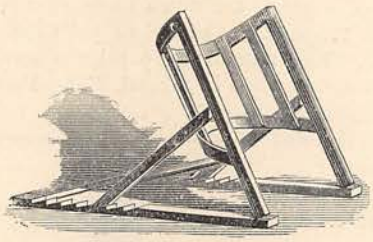
A Telautograph Exchange.

In a former GATHERER we explained the principle of the telautograph, or far-writer, of Mr. Elisha Gray,

the well-known American inventor. The apparatus has now been perfected, and a telautograph exchange, on the model of a telephone exchange, has been opened in Chicago, by which the subscribers will be able to correspond with one another by letters sent through the wire instead of through the post. The sender simply writes, in pencil, on a desk transmitter, and an autograph copy, or fac-simile, is at the same time written in ink at the other end of the wire by the receiver.

A New Bed-Rest.

A bed-rest for invalids, especially the convalescent in cases of heart disease and dropsy, is shown in the



figure, and will explain itself. It is constructed of light wood, the back is curved, and can be inclined to any angle to suit the patient by shifting the hinged props along the rack. There are brass buttons round the back to secure the pillows if need be by strong tapes provided for the purpose, and the wood can be carbolised to keep it wholesome.

The Malay Fire Syringe.

Mr. F. W. Rudler, of the Museum of Geology, has drawn attention to a "fire syringe" for producing fire by the sudden compression of air which Mr. H. Louis, a mining engineer, found a young Malay using in the district of the River Teluban, at the south-eastern end of the Malay Peninsula. The syringe is made of hard wood, strengthened by a jacket of plaited rattan cane, and about two and a half inches long. The tube tapers a little towards the closed end; and a piston of hard wood, packed round with string, is suddenly driven into it. A small piece of tinder with which the disked bottom of the piston is primed thereby catches fire, and on being withdrawn is blown to brightness. The tinder is kept in a pouch, made from the skin of a large bean, ready for use.

The Real "Wandering Jew."

The "Wandering Jew" of mediæval folk-lore had different names in different countries; for example, Cartaphilus, Ahasuerus, and Isaac Laquedem. According to one account the Wanderer had been doorkeeper in the house of Pilate, and had struck our Saviour when He entered it, at the same time ordering Him to hurry. According to another account he was a shoemaker, who had been present at the Crucifixion. In either version, however, he had been commanded to wander

THE REAL WANDERING JEW.—FIG. 1.

and live on until the second Advent. That some real foundation existed for the legend can scarcely be doubted, and several old pictures of the Wanderer are extant. Fig. 1 is a copy of a seventeenth century portrait of him, the oldest known, and now in the Munich Library. Fig. 2 represents a sketch now in the Bibliothèque Nationale, Paris, which was made at Avignon where the original was seen on April 22nd, 1784. A clue to the mystery has apparently been discovered by Dr. Henry Miege, of Paris, in a peculiar nervous affection which exists among certain Jews from a district on the frontiers of Germany, Poland, and Austria. Several cases of this disorder, or "neuropath voyageurs," have been treated of recent years at the Salpêtrière Hospital, Paris, to which the fame of the late Dr. Charcot had attracted them. They were all young men, but looked nearly double their age, and were afflicted with a nervous craving for travel which was found to be incurable. Figs. 3 and 4 are portraits of two subjects: one, Moses B——, a Polish Jew of Warsaw, 38 years old. He was educated in a Russian school by the military authorities, and on being pressed to abjure his religion, fled the country. He was then only sixteen years of age, and ever since he wandered from one country to another. At Buda-Pesth he married and tried to settle down, but the impulse to travel led him and his family of three children to Jerusalem, where he left them and resumed his solitary wanderings over Europe, visiting England among other countries and trying to find a remedy for his disease, but all in vain. In 1892 he arrived at the Salpêtrière and was unsuccessfully treated with electricity. The other is, Gottlieb M——, a Jew, of Wilna, 42 years old, who has also travelled over the Continent seeking a cure for his malady. These wanderers speak several languages, are shabbily dressed, with long unkempt locks, wrinkled faces, and a sad expression. In fact, they exhibit the traditional traits of the "Wandering Jew," and Dr. Miege infers that the old legend has arisen

THE REAL WANDERING JEW.—FIG. 2.

from similar cases in the past, which have probably been confounded with one another.

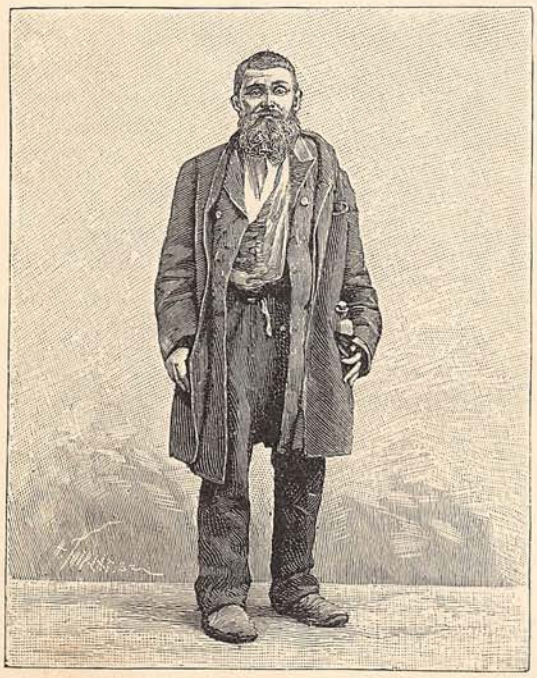
Railway Progress.

We have already mentioned in the GATHERER that steps have been taken to build an electric railway between St. Louis and Chicago, on which the trains shall attain a speed of 120 miles an hour. It has recently been proposed to emulate this project by the mono-rail system of Lartigue, the carriages being supported from a single rail elevated above the ground on trestles. Probably this will be a form of express travelling in the future, whether by steam or electricity. In connection with this subject we may refer to the new "man-catcher," which has been tried successfully on the street cars and electric railway in Brooklyn, New York. The device, which is intended to prevent persons being run over, is a modification of the American "cow-catcher," and consists of an iron frame fitted with wire netting, and air-cushions on spiral springs, which hangs in front of the car to within a couple of inches of the rails. A pedestrian overtaken unawares by the car is simply thrown backwards into the net, and suffers no injury but a slight shock.

Where is the Moon's Atmosphere?

It is a well-ascertained fact that the moon has little or no atmosphere, and as it probably had one, like other planetary bodies, at some former time, the question is: What has become of it? Quite recently Sir Robert Ball suggested that the particles of gas forming the moon's atmosphere have gradually bounded off into space, or stolen away until comparatively few or none are left. This ingenious theory offers the best explanation yet advanced, and it also leads us to surmise that our own atmosphere has been losing particles in the same way from time immemorial. In fact, there is a prospect that millions of years hence the earth will have no atmosphere to speak about, if by that time it has not fallen into the sun or been annihilated by a comet! We should add that Sir Robert Ball's ideas on the moon's atmosphere are not quite novel, as they were set forth by Mr. S. Tolver Preston fifteen years ago: but they have recently borne fruit in other minds, and the hypothesis is now well established.

THE REAL WANDERING JEW.—FIG. 4.



THE REAL WANDERING JEW.—FIG. 3.

The Algonkin Park.

The Canadians, following the good example of their neighbours south of the line, have set apart for ever a tract of primeval forest as a natural park and preserve for wild animals, plants, and trees. The Algonkin Park, as it is called, is forty miles square, and situated in the north-west of Ontario, at the "height of land" where a large number of rivers take their rise from lakes and ponds among the hills. The scenery is very picturesque, and the climate is dry and healthy; there are fragrant forests of pine and cedar, mineral springs, and opportunities of exercise, so that when hotels have been built and a railway opened to it, the park is likely to become a valuable sanatorium. The naturalist will there have an opportunity of studying primeval forms of vegetation, which are fast disappearing in the settled parts of Canada.