Correspondence.

How to Clean the Streets.

To the Editor of the SCIENTIFIC AMERICAN:

You were kind enough to give space to the subject matter of the cheapness and efficacy of street cleaning in Rome, which is, of course, largely attributed to cheap labor and less material to clean, as compared with the city of New York, the traffic here of horses being much greater.

My personal experience or observation in noticing the cleaning of streets in Europe by flushing under hydraulic pressure of some 50 pounds: At Lucerne, Switzerland, two men, one at either end of a block or street some 300 feet long, flushed the block absolutely clean and bright in not exceeding ten minutes; or 150 feet to one man in 10 minutes = 900 feet per hour = 7,200 feet in 8 hours, or less than 400 men to clean 500 miles.

Streets cleaned in Europe by this process are usually preferred by pedestrians to sidewalks.

I noticed that streets in many of the seaboard cities are flushed by sea water, leaving white salt coating without microbes.

The point in question is: What it would cost to place 18 inch mains down through the several dividing avenues of the city, from these take hose, as in Europe, to clean the side or cross streets in the manner used in Lucerne, also in other European cities using sea water exclusively. G. W. K.

New York, June 1, 1895.

Pedestrians Should Have the Right of Way.

To the Editor of the SCIENTIFIC AMERICAN:

In your article on "The Present Status of the Bicycle" (June 8) it strikes me you are too easy on the rider in his relation to the pedestrian. The latter is supposed to have the right of way in crossing a street or avenue, but it is a right that nine-tenths of the riders utterly ignore. With the great increase of the bicyclists, the pedestrian, especially if aged and feeble, is completely at the mercy of rough, careless riders and liable to be knocked down at any moment. And the women riders are quite as careless. Neither is the pneumatic tire any safeguard in case of collision, except at very low speed.

Last fall a lady waiting for a car close at hand was struck by a woman rider and knocked down. No bones were broken, but she was confined to the house all winter and has not yet regained her usual strength. A few nights ago, passing into Washington Park, a lady was struck by a wheel going at such a high speed that she was knocked ten feet, her arm broken in several places and other severe injuries. No bell was rung, no light shown. The only excuse made by the fellow to the lady's husband was: "She got in my way."

That seems to be the popular idea among wheelmen —"We have the right of way; keep out of it if you don't want to be hurt." In most cases, when they do strike any one, they scuttle away without apology or inquiry. It has become exceedingly dangerous to cross the avenue of Washington Park, even by day, so numerous and so reckless are the riders. What is needed is rigid restriction, where pedestrians are numerous, to a moderate rate of speed. Merely insisting on the use of bells and lights is not enough. A few arrests of high-speed riders, promptly and universally done, would have a wholesome effect.

Albany, N. Y., June, 1895. WM. H. COLEMAN.

Milk as a Diet.

To the Editor of the SCIENTIFIC AMERICAN:

I recently tried the experiment of living thirty days with only sweet milk as a nourishment. At the beginning I had no difficulty in changing my diet from solid to liquid. During the thirty days of the experiment I lost five and one-half pounds in weight, but I lost no strength. I think that I lost the weight because the weather was warm, and because I took so much exercise. I rode a bicycle considerably during the time, and used 16 pound dumb bells and other heavy weights every day (except Sundays). I took much more exercise than I usually take, as I was determined to test the thing fairly. On the seventh day of the experiment I ran several foot races with a skillful runner, and was beaten in each race. On the thirtieth day I ran some more races with the same person, but did better than in the first races. This fact proves that I lost no strength. I took four pints of milk daily for the first three weeks of the experiment, and five pints daily for the last week. I think that a healthy person should take about five pints of milk daily when no other food is being taken. I drank milk after intervals of two hours during the day, commencing at seven o'clock in the morning and continuing till ten o'clock at night. Then I would take no more till the next morning.

My principal reason for trying the experiment was to endeavor to establish the fact that persons convalescing from sickness may grow stronger with no other nutriment than sweet milk, and that they are not obliged to take "something solid" to eat, as so many people imagine. Many a convalescent has gone to his grave as a result of overtaxing his weak stomach by putting "solid" food into it. The result of the experiment also shows that the old belief that "bread is the first essential of (human) life" is erroneous.

I believe that a man could live for any length of time, and take heavy exercise all the while, with no other food than sweet milk. H. F. WHITE, M.D.

Crawfordville, Ga.

Science Notes.

Invention of the Barometer and Mercurial Thermometer.—Mr. Hellmann devotes an interesting article in the Meteorologische Zeitschrift to the history of the invention of the barometer. Torricelli, who died at the early age of 39, gave a description of the barometer in a letter written June 11, 1644, to his friend Ricci. The denomination of the barometer is due to Robert Boyle, who used the apparatus along about 1659, and it was in France that the first continuous observations were made.

Mr. Maze recently pointed out the fact, before the French Academy, that sixty-two years before Fahrenheit made such an instrument, a mercurial themometer was used by Ismael Boullian (1659). It had an arbitrary scale, the value of a degree being about 10·7° C., and the zero of the scale at —53·76° C. The temperature of melting ice would be 5·34° and that of boiling water 15·27°.

New Ore of Thallium.—Nature announces the discovery, by Mr. Krenner, of Budapest, of a new ore of thallium, which has received the name of lorandite. This new ore is found associated with realgar at Allchar, Macedonia. It presents itself in the form of monosymmetric transparent crystals varying in color from carmine to kermes red. Its formula is $TlAsS_2$.

Electrolytic Determination of Poisons.—In a memoir presented to the Congress of Hygiene of Liverpool, Mr. Kohn shows that electrolytic analysis has made such progress in recent years that it might be advantageously employed for the detection of metallic poisons in medico-legal investigations.

In the case of antimony, lead, copper, mecury, cadmium, etc., this method would permit of revealing the presence of a tenth of a milligramme of the metal. Electrolytic analysis is much more sensitive than any other process, especially in the presence of organic substances.

Phosphorescence at Low Temperatures.—Continuing his researches upon the behavior of gases at low temperatures, Professor Dewar has ascertained some interesting facts which he has embodied in a lecture recently delivered before the Royal Institution. Operating at the temperature of the ebullition of air, that is to say at 190° below zero, he has found that many common objects, such as cotton, leather, silk, and feathers, acquire phosphorescence. On the contrary, the photographic plate loses its sensitiveness in a great measure, and is not readily affected by light.

Protection of Iron and Steel from Rust.—According to Invention, Professor Calvert has reached the conclusion that the carbonates of potash and soda possess the same property of protecting iron and steel from rust as do these alkalies in a caustic state. Thus it is found that if an iron blade is immersed in a solution of either of the above carbonates, it exercises so protective an action that that portion of the metal exposed to the influence of damp atmospheric air does not oxidize, even after so long a period as two years. Sea water, to which the carbonates in suitable proportions have been added, is said to produce similar results.

Restoration of Old Bindings.—The Petit Bibliophile gives, over the signature of its editor, the following method of renovating the bindings of old books so as to make them look as if newly bound.

After wiping the work with a very soft rag in order to remove every particle of dust, a fine sponge saturated with alcohol is passed over the binding; after which, there is applied with a camel's hair pencil or a little wadding, as rapidly as possible, a coat of varnish composed of the white of an egg dissolved in a third of its volume of 90 per cent alcohol.

Artificial Rubber.—According to Invention, a substitute for rubber has recently been discovered by E. Desprez, of Paris. Gutta percha in sheet form is taken and covered on one side or both sides with a close-meshed fabric (even wire gauze may be used for some purposes) and the whole is conglomerated by pressure under heat. Saw dust, zinc dust, and other suitable and cheap substances may, it is said, be incorporated with the gutta percha.

An artificial rubber of more or less strength may also be obtained by dissolving four parts of nitro-cellulose in seven parts of bromo-nitro-toluol. Upon varying the proportion of the nitrocellulose, a material may be obtained that possesses elastic properties and closely resembles India rubber, and even gutta percha. If desired, nitro-cumol and its homologues may be used instead of bromo-nitro-toluol.

As the base of a product designed to replace India rubber and gutta percha, Mr. Le Brocquy, says the Revue Scientifique, proposes to employ the composition used for making printer's rollers, that is, a mixture formed of variable proportions of glue, glycerine, and molasses. This composition is to be covered with canvas, ordinary rubber or any other material suitable to protect it against humidity, great heat or any mechanical action. Although glue, glycerine, and molasses form the fundamental basis of the new compound, the inventor reserves the right to modify his product by the addition of other substances.

Utilization of Blast Furnace Gas.—The well known English engineer, Mr. Thwaite, proposes to utilize the gases that escape from blast furnaces for the production of motive power by causing them to pass into a special motor.

The utilization of such gas would permit of urging the draught of the blast furnaces and of increasing their rendering by 45 per cent. The motors might, moreover, be employed for other purposes and effect a great saving, since, with high tension electric transmissions, the power may be utilized at great distances under very satisfactory economic conditions.

The power produced might be used, too, in the villages within a radius of 15 miles either for the transmission of motive force or for electric lighting. Mr. Thwaite asserts that this method would permit of assuring the latter service at a cost much less than lighting by gas.

Plowing by Electricity.—An electric plow has been brought out by Messrs. Zimmerman & Company, of Halle, Germany. A chain is stretched around the field in which the apparatus is to be used, and runs over a sprocket wheel on the motor, which is thus able to wind itself along and drag the plow after it. The cable to the motor is carried on a number of small trolleys running over the ground. The length of the cable is sufficient to reach across the field, as the motor, as it winds itself backward and forward, swings the cable over the ground. By starting work on the side nearest the motor and working up the field away from it, the cable does not foul the plow. The trials of the installation are said to have been exceedingly satisfactory.

The Vitality of Seeds.—Some interesting notes on the vitality of seeds have recently been contributed by Mr. W. B. Hemsley, F.R.S. Referring to the question of mummy seeds, Mr. Hemsley agrees that carefully conducted experiments do not support the usual ideas entertained in regard to the vitality of Egyptian wheat and peas. Contrariwise, he admits that some seeds do retain their vitality for very lengthened periods, not comparable, however, to the legendary extent of life of the mummy wheat. He mentions seeds of the sensitive plant which germinated after being kept in a bag for sixty years at the Jardin des Plantes. From twenty to twenty-five years is a common enough period during which seed vitality may remain unimpaired. One case is quoted from Tournefort, from whose herbarium, it is said, kidney beans were taken, with the result that after one hundred years' still life they germinated. Lindley states that raspberry plants were raised from seed which had been taken from the stomach of a man whose skeleton was found buried thirty feet deep. Coins were found at the same place from 1,600 to 1,700 years old. Also, some twenty years ago, when the slack of ancient Greek silver mines was cleared away, some plants previously unknown in the locality sprung up. Here the suggestion is that the seeds had remained dormant since the classic ages, and sprang into vigor when the covering soil was removed. But, at the very least, we may conclude that possibilities of errors of observation are included in such instances, and that it is perhaps safer to assume that questions of plant vitality may be bounded by limits of much more modest dimensions than a score of centuries.

Origin of the Word "Arsenic."—A correspondent of the Academy, dealing with this subject at considerable length, sums up by assuming that the Greeks, as early as the fifth century B. C., borrowed, perhaps from the Persian, a word to which they gave the form sandarake, and applied it to the red sulphuret of arsenic, or realgar. Six centuries later, Dioscorides, wishing, perhaps, to find another word for the yellow sulphuret of mercury, or orpiment (which had possibly up to that time been included in the term sandarake), and finding in some other language, perhaps Arabic, a word with this meaning, viz, zarnik (or azzarnik), in which he discovered some resemblance to arsenikon, "male," boldly adopted this latter word, and gave it a new meaning. It is pointed out that the curious part of the matter is that, if this view is correct, sandarake and arsenikon would both appear to have been taken from the same Oriental word, modified somewhat, perhaps, both in form and signification in the course of centuries, and in its passage from one Eastern language to another.—Pharmaceut. Jour.

FIVE linotype typesetting machines were recently removed from the office of the Cincinnati Enquirer and set up ready for use in the office of the New York Morning Journal in thirty-six hours—a remarkable piece of work, considering the complicated nature of the apparatus