Calling a Dog by Telephone.

It is said a gentleman who possesses a remarkably intelligent dog recently lost the animal in the city streets. Jack was happily found by a friend of his owner, who recognized him immediately, and at once called up his friend by telephone. "Have you lost your dog?" "Yes; have you seen him?" was the reply. "Suppose you call him through the telephone." The dog was lifted up and the earpiece placed at his ear. "Jack! Jack!" called the master. Jack instantly recognized the voice and began to yelp. He licked the telephone fondly, seeming to think his master was inside the machine.

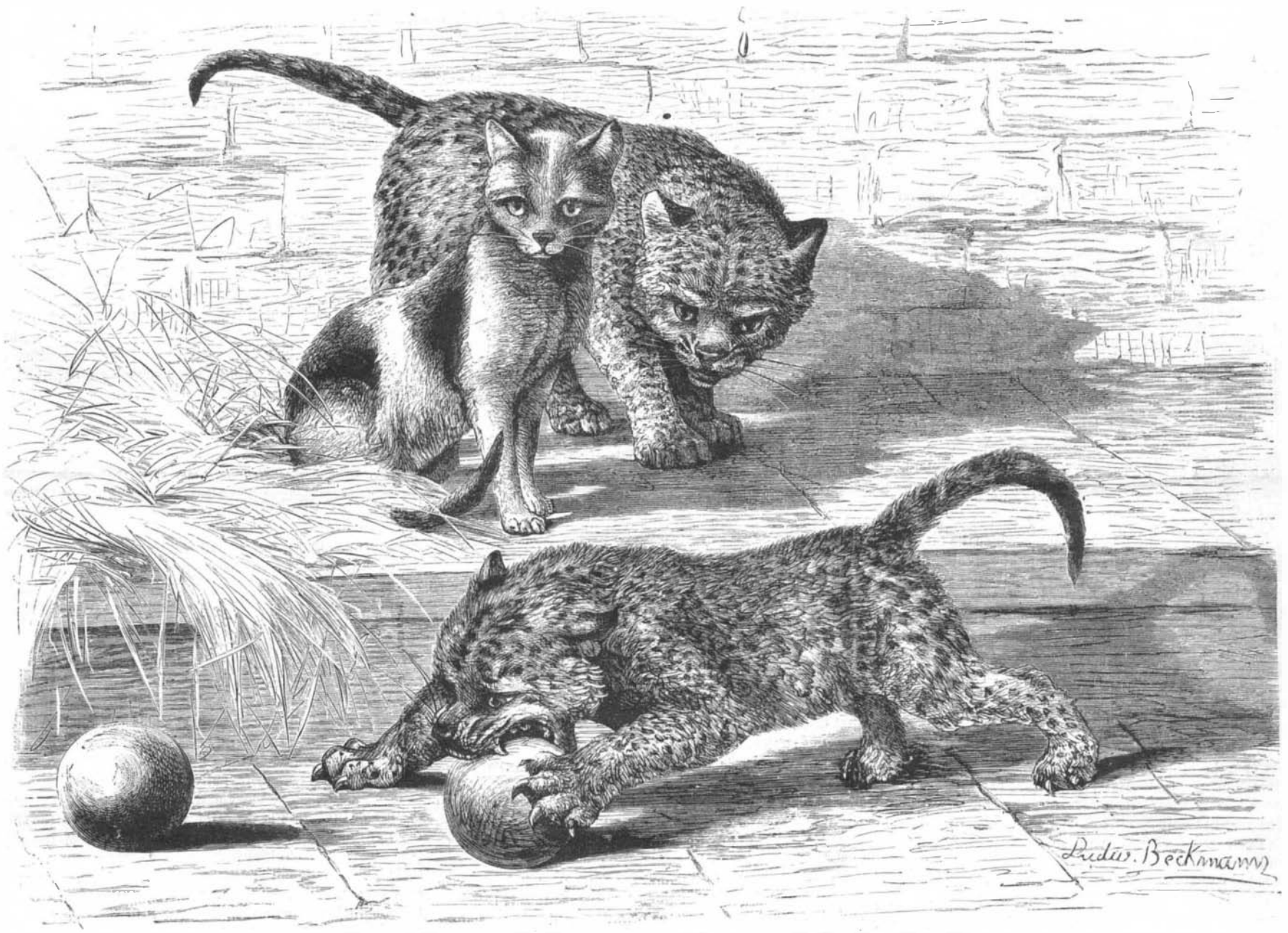
YOUNG PANTHERS IN THE ZOOLOGICAL GARDEN AT DUSSELDORF, GERMANY.

Last year two panthers were born at the zoological garden at Dusseldorf, but the mother, a yellow panther, devoured both cubs, which resembled the father, a black panther.

A short time ago two cubs were born of the same parent animals. They were born blind; one opened its eyes after four days, the other after eight days. In the beginning they were of a dark, blackish gray color, but this color gradually changed to light gray and a yellowish tint.

Immediately after birth the cubs were taken from their mother and given to two sucking cats, who nursed their adopted children with the greatest tenderness and care. The cubs grew wonderfully, and soon surpassed their foster mothers in size and strength; but notwithstanding that they were cared for in the best manner, they soon began to show signs of sickness, and died of softening of the bones, a malady common to young animals of prey.

The annexed, from a drawing by L. Beckmann, is taken from the *Illustrirte Zeitung*.



YOUNG PANTHERS IN THE ZOOLOGICAL GARDEN AT DUSSELDORF, GERMANY.

Animated Frozen Fish.

The *American Angler* vouches for the following fish story: A fish dealer in Salineville, Ohio, received a box of frozen fish from Cleveland, during one of the recent blizzards. They were so hard and brittle that they had to be handled with great care to keep them from breaking to pieces. He sold one to an old lady who took it home and put it in a bucket of cold water to thaw out gradually. During the night she heard something splashing around in the kitchen. Supposing it was the cat trying to get the fish, she jumped out of bed, seized the broom, and rushed to the scene. She found the fish flopping in the pan. As near as could be learned this fish had lain out in the cold two nights before being packed, and had been out of the water for more than two weeks.

Tumbler Pigeons.

The tumbling of the pigeon is a habit which, if seen in a wild bird, would certainly have been called instinctive; more especially if, as has been asserted, it aids these birds in escaping from hawks. There must have been some physical cause which induced the first tumbler to spend its activity in a manner unlike that of any other bird in the world. The behavior of the ground tumbler or Lotan, of India, renders it highly probable that in this sub-breed the tumbling is due to some affection of the brain, which has been transmitted from before the year 1600 to the present day. It is only necessary gently to shake these birds, or, in the case of the Kalmi Lotan, to touch them on the neck with a wand, in order to make them begin rolling over backward on the ground. This they continue to do with extraordinary rapidity until they are utterly exhausted, or even, as some say, until they die, unless they are taken up, held in the hands, and soothed; and then they recover. It is well known that certain lesions of the brain, or internal parasites, cause animals to turn incessantly round and round, either to the right or left, sometimes accompanied by a backward movement; and Mr. W. J. Moore (*Indian Medical Gazette*, Jan. and Feb., 1873) gives an account of the somewhat analogous result which followed from pricking the brain of a pigeon with a needle. Birds thus treated roll over backward in convulsions, in exactly the same manner as do the ground tumblers; and the same effect is produced by giving them hydrocyanic acid with strychnine. One pigeon which had its brain thus pricked recovered perfectly, but continued ever afterward to perform somersaults like a tumbler, though not belonging to any tumbling breed.

The movement appears to be of the nature of a recurrent spasm or convulsion, which throws the bird backward, as in tetanus; it then recovers its balance, and is again thrown backward. Whether this tendency originated from some accidental injury, or, as seems more probable, from some morbid affection of the brain, cannot be told; but at the present time the affection can hardly be called morbid in the case of common tumblers, as these birds are perfectly healthy and seem to enjoy performing their feats, or as an old writer expresses it, "showing like footballs in the air." The habit apparently can be controlled to a certain extent by the will. But what more particularly concerns us is that it is strictly inherited. Young birds in an aviary which have never seen a pigeon tumble take to it when first let free. The habit also varies much in degree in different individuals and in different sub-breeds; and it can be greatly augmented by continued selection, as seen in the house tumblers, which can hardly rise more than a foot or two above the ground without going head over heels in the air.—*Charles Darwin.*

Some Recent Scientific Discoveries.

Mr. Hughes' researches, which tend to show that a magnet is made up of a great number of atomic magnets or molecules, is, perhaps, the most interesting of the many papers on electric science which have been published in the course of the last twelve months. Several new comets have been detected, and, as one of the conclusions derived from the recent transit of Venus, it is announced that the sun's distance from the earth is ninety-two million seven hundred thousand miles.

Dr. Hughes has succeeded in photographing the sun's corona by producing an artificial eclipse, and, among other applications of photography, a compass has been devised by which a ship's course can be unerringly chronicled by aid of the sun, thus no longer rendering captains and courts of law dependent on the veracity of steersmen or the entries in logbooks.

Professor Langley has shown that the normal color of light is not white, but bluish, and in chemistry, which, like physics, has for the most part been "practical" in its labors, a new species of explosive—one of the dynamite family—known as "panclastite," ought to be credited, or discredited, to M. Turpin.

In biological science, though the amount of work done has been considerable, there is less of popular interest to note. The curious fresh water jelly fish, which appeared so mysteriously in the Victoria tank in the Royal Botanic Gardens, in Regent's Park, has again shown itself; and as indicating that the botanist has not yet quite exhausted the globe, the island of Socotra, in the Red Sea, has yielded to one visitor no fewer than thirty-seven new species of plants. But, perhaps, the most important discovery in biology which 1883 has to boast of is that which tends to prove that the protoplasm in cells passes through their walls, uniting them with other cells, contrary to the view formerly held. Should this statement be generally confirmed, it will rank among the greatest of the year's achievements.—*London Standard.*

Cause of the Red Twilight.

The conclusion reached by Joseph Wharton, of Philadelphia, from experiments made with dust found in the snowfall of January 20, last, that the brilliant twilights of the past winter were caused by volcanic particles in the air, finds corroboration in the experience of the ship Ridgway, which arrived at this port last week. Mr. Wharton has secured from the ship specimens of pumice which covered the sea on that portion of her voyage when about 500 miles from the island of Krakatoa, the scene of the Javan volcanic convulsion. He finds this pumice to be substantially identical in its composition and structural arrangement with the strange dust he found in the snow.

Chemical Analysis in Manufactures.

The successful pursuit of any business depends mainly on the intelligence of the men engaged in it. It is not enough in these times for a man to have qualified himself by a general commercial education as ordinarily understood. He must have had some knowledge of science, and have been trained to see the necessity of relating his plans and methods of working to principles of technology. No manufacturing business can be thought of without also thinking of the services of the physicist and chemist.

The baker who makes our bread needs to know the percentage strength of his yeast as a ferment, or of the baking powder he uses to raise the bread. If he use baking powder, he may depend on working experience to aid him in maintaining the quality of his work. Such experience unassisted by frequent tests is a very fallacious guide. There are in the market several very good powders, but each one has a varying constitution, sometimes giving more, sometimes less, than the standard results. If fifty cents per pound be regarded as a good value for serviceable powder of 125 cubic inches of gas per ounce of powder, then it follows that rival powders yielding but 100 or 75 cubic inches are not worth more than half the money. Exact analysis in this case can alone determine values.

The sugar refiner is dependent on the chemist for the successful conduct of his business. He must know in buying a cargo of raw sugar about how much sugar, in terms of the polarimeter, he will get from a ton of raw material. The beet root sugar manufacturer needs still more than the worker in sugar cane to know the percentage sugar value of his beets, and not merely so, but to know the quantity of impurities—such as potash and soda salts—which retard crystallization in the pans.

The cotton manufacturer and the cloth weavers need to be informed of the quality of their bleaching materials. How much of chlorine gas can be evoked from a sample of bleaching powder. The value of the article depends on the amount of chlorine gas that can be turned out of it. The dyer also needs analytical processes to aid him in his selection of dyeing materials; differences in the percentage strength of any one of his ingredients would spoil the work he undertakes. The harmony of color, the beautiful shading of his work, depend entirely on his obedience to principles of chemistry. The manufacturer of chemicals tests every description of materials he manipulates. The iron and copper pyrites, which yield him sulphur for his sulphuric acid, are bought at per cent of sulphur they yield. The common salt used to make the hydrochloric acid must pass through the same ordeal before it can take its place in the list of manufactured goods.

The manufacturer of fertilizers must be most scrupulously careful in his examination of raw materials. His phosphate must yield tribasic-phosphoric acid; his sulphuric acid must be fully up to the strength called for by the terms of his contract, and the sulphate of ammonia which he buys from the gas house must be pure. The blood he obtains from the slaughter houses must give him the 13 or 15 per cent of ammonia which the article ordinarily contains. Any variation in the strength of dried blood will lessen or increase its value to the amount of $2.50 to $3.00 per cent according to the market values.

The value of lime to the builder for the manufacture of mortar depends on the percentage of real lime, or oxide of calcium, it contains. The quantity of this determines the amount of water it will take up and the efficiency of the set mortar when it is converted into calcium carbonate in the walls of a building. Fresh or caustic lime makes good mortar, but partially slaked lime is unfit for use as a cement.

The gas engineers depend on the analysis of coal to inform them what quantity of illuminating gas they can get from a given cargo of coal, and the percentage of residuals —as coke, tar, and ammoniacal liquor—they will furnish.

Smelters of iron and copper ores rely on chemical analysis for economical working, and in many businesses the purity of the metals determines their fitness for their respective functions in the arts. Pure metals are an absolute necessity to the electrician in construction of machines for telephonic, telegraphic, and lighting purposes.

The handmaidenly help of chemistry has frequently decided the question of profit or loss for many a manufacturer. The more efficient this great science can be made in its operations the more prosperous will the manufacturing interests of the country become. The more we can learn to appreciate this force the easier will be our work, and the burdens we carry will lighten.—*The Canadian Manufacturer.*

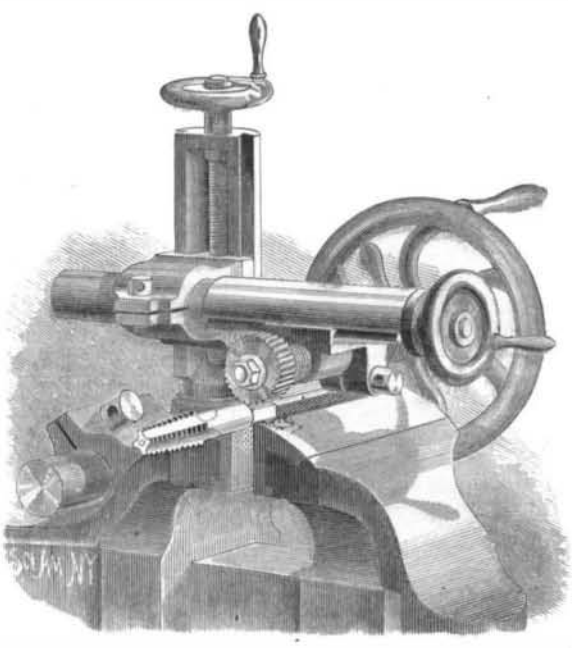
A Station Indicator for Cars.

An automatic station indicator, invented by Mr. H. E. Bissell, of Hartford, Conn., is now being tried on the elevated railroads in New York. One of these indicators is in operation on the cars in use on the branch road running to the 34th Street ferry, and has so far worked very well. At either end of the car, just above the door, is a neat box on which is painted the words, "Next Station." Below this appears the name of the station at which the next stop is to be made by the train. For example, take a train on the Third Avenue line: A passenger entering the up-train at 9th Street will see at each end of the car "Next Station—9th St." But as soon as the train left that station he would hear a bell ring at either end of the car and would see the annunciator change to read, "Next Station—14th St." The same changes would be made at 18th, 23d, and 28th, and so on up. At 34th Street station the annunciator would read: "Change cars for 34th Street ferry," and at 42d Street, "Change cars for Grand Central Depot." All these changes are made automatically and at the same time in every car on the train. The machinery is very simple, and the ringing of the bells and changing of the indicator are accomplished by the moving of a small lever in the locomotive cab, which is connected with the air brake valves. The connections between the cars and the locomotive are simple rubber tubes similar to air brake hose, but smaller in size.

A NEW ATTACHMENT FOR VISES.

The machinist, model maker, or amateur who is not so fortunate as to possess a milling machine is often obliged to spend hours with the file, etc., over a job which can be easily, quickly, and accurately done with a rotary cutter. Milling cutters are sometimes used on an arbor running in a lathe, but from the lack of means of adjustment their use in this way is quite limited.

This attachment will not only reduce very much the labor performed at the vise bench, but will save its cost in a short time in files. A file once dulled is useless, but the milling cutter can be sharpened again and again. The reproduction of a number of small articles of the same form is easily accomplished by the use of suitably shaped cutters. This attachment can be bolted to any vise by the aid of clamps, or it may be carried in a special place cast for it on the rear jaw of the vise, as shown in the engraving. It can be readily turned back out of the way when not in use by simply loosening a screw, and without detaching it from the vise. In the case of a piece of work too large to be held in the vise, the machine can be clamped directly to the work itself. The standard and arms are of round section, and can be fixed in position to operate at any angle and on any piece of work



SCHERMERHORN'S ATTACHMENT FOR VISES.

that may be held in the vise. It is adjusted vertically by a screw as shown, and is fed back and forth over the work while the cutter is revolved by the hand at the wheel shown on the right.

Horizontal adjustment is accomplished by a threaded sleeve working in a split bearing which can be clamped to hold the cutter in any position without interfering with its free revolution.

By substituting a drill chuck for the cutter it becomes a most efficient drilling machine, doing work that it is impossible to accomplish in a lathe or ordinary drilling machine. For cutting off bars, rods, etc., the milling wheel is replaced by a circular saw. This invention has been patented by E. E. Schermerhorn, of 125 West 53d Street, New York.

Fire-Proof Theaters.

In two recently constructed theaters abroad—one at Edinburgh and the other in London—special effort has been made to render them practically fire-proof. With this view, one of the most important provisions is that of building the proscenium wall, separating the stage from the auditorium, from the basement to the roof, and providing its large opening with an iron curtain. In the case of the new Prince's Theater, London, this fire-proof curtain weighs 7½ tons, is 30 feet 6 inches wide by 28 feet 6 inches high, and is constructed of two screens of wrought iron plate ⅛ inch thick, forming a double division, with an air space of 6 inches between.

This curtain is raised by means of a hydraulic ram, for which only 84 gallons of water is required, furnished by the city mains. It may be raised or lowered in 40 seconds, by simply touching a lever in the prompter's box. The only two other openings in the proscenium wall at this theater having iron doors, a fire on the stage might thus be readily separated completely from the audience portion of the house.

Messrs. Clark, Bunnett & Co., of London, and of No. 162 West Twenty-seventh Street, New York, constructed and put up the fire-proof curtains in both the above theaters.

Death of Professor Guyot.

Arnold Henry Guyot, Ph.D., LL.D., Professor of Geology and Physical Geography at Princeton for nearly thirty years, died there on February 8, in his 77th year. He was of Swiss birth, and an intimate friend of Prof. Agassiz, with whom and Forbes and Desor he made a specialty of the study of glaciers. He had been Professor of History and Physical Geography in the Neuchatel Academy from 1839 to 1848, coming to America in the latter year, where he delivered occasional lectures at Cambridge on the relation between physical geography and history, that attracted wide attention. He also lectured in the Massachusetts normal schools, and was employed by the Smithsonian Institution to organize a system of meteorological observation. At Princeton, where he was for so many years, he was regarded by the other professors as remarkable, not only for his wisdom and scientific attainments, but also for his great gentleness and humility. He was the founder of the Museum there, which is regarded as one of the best of the kind in this country; and many of the specimens were collected and arranged by his own hands.

Professor Guyot prepared a series of primary, intermediate, and physical geographies between 1866 and 1873, which had an extensive use in the public schools of the country. At the Vienna International Exhibition, in 1872, he received a medal for his geographical works. Before the Evangelical Alliance in New York, in 1873, he read a paper on "Cosmogony and the Bible." Almost his latest work was the preparation of a biographical memoir of Professor Louis Agassiz, for publication by the National Academy of Sciences, of which he was an eminent member. Half of this was read in October, 1877, at the semi-annual meeting of the Academy in New York. He co-operated with President Barnard, of Columbia, in editing Johnson's "Cyclopedia." The last work of this voluminous writer, "Creation," showing the harmony of Mosaic cosmogony with the facts of science, is now in the hands of a publisher. He had been hourly expecting the arrival of the first copies, and a message came a short time after his death, stating that the delay was occasioned by the fact that he had been addressed at Princeton, N. Y., instead of Princeton, N. J.

This work had engaged the Professor's attention during the past fifteen years, and he had fondly looked forward to its completion as being the crowning work of his life. It seems a pity that he should thus have been deprived of what would have afforded him the highest pleasure he would have asked in his closing hours.

Value of Small Things.

Some years ago a firm in England patented a candle. Now, a candle seems to be a pretty small thing to patent, but it made a fortune for its owners, and when one reflects on the large number of candles annually consumed they will better realize that a very small royalty on every pound of them will aggregate a large revenue. Similar instances might be given from cases at home, where inventors have originated some simple article in daily use, patented it, and then have received large rewards. "Despise not the day of small things," says the proverb, and we may say in addition, deride no idea as useless that intends to advance the arts and sciences in ever so small a degree, merely because it seems simple.

A very great misconception prevails in the minds of many persons in respect to patents. They are regarded as stepping stones to fame! This is usually a delusion. An invention is first and principally an investment—just as an artist's picture. The glory and renown attaching to either picture or invention is the after part—the dessert to the solid feast of dollars and cents. The natural result of the mistake alluded to is to lead persons to underrate the value of their ideas. It is not at all uncommon to hear individuals exclaim: "What, get a patent on that thing!" in alluding to some little affair that can be carried in the pocket. That very despised "little thing" is just as likely to be the means of putting dollars into the pocket of its patentee as the little candle patent was the foundation of one of the largest candle manufactories in England.

How long would it take to fill the Sahara?

In view of the recent project to fill up the Desert of Sahara by connecting it with the Mediterranean Sea, a correspondent, E. L. B., writes to us inclosing a few figures, the results of some calculations.

According to the latter it would require 4,000 years for the waters from the Mediterranean to fill the valley of the Jordan, which is 1,000 feet below the former, the water to flow through a passage 100 ft. wide by 25 ft. deep with a velocity of 4 miles an hour. With a channel 100 times this capacity it is possible, he says, to limit the period of filling to 40 years. At the same rate it would take 40,000 years to fill up the Caspian Sea to the sea level, and thousands of years to fill up the Sahara.

To Cure Bacon without Smoking.

Curing bacon by hanging it up, after proper salting, in a tobacco barn, is recommended by a Kentucky correspondent as making a sweet and perfect cure, with no necessity for smoking, and leaving no taste of tobacco in the meat. It is probable that the aroma given off by the tobacco has a mild antiseptic effect, such as that which belongs to creosote, carbolic acid, and other substances which occur in wood smoke.