The Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY
At No. 37 Park Row (Park Building), New York.

O. D. MUNN, S. H. WALES, A. E. BEACH.

TERMS—Three Dollars per annum—One Dollar in advance, for four months.
Single copies of the paper are on sale at the office of publication, and at all periodical stores in the United States and Canada.
Sampson Low, Son & Co., the American Booksellers, No. 47 Ludgate Hill, London, England, are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.
☞ See Prospectus on last page. No traveling agents employed.

VOL. VIII, NO. 26...[NEW SERIES.]....*Nineteenth Year.*

NEW YORK, SATURDAY, JUNE 27, 1863.

TO OUR READERS.

Time, with unceasing tread, has brought us to the middle of another year, and with this number we conclude the eighth volume of the new series of the SCIENTIFIC AMERICAN. We earnestly hope that all our readers whose terms now expire will renew their subscriptions and forward the money at the earliest opportunity. Never before was there such a necessity for inventors, mechanics, manufacturers, and others maintaining an acquaintance with the inventions and discoveries of the day. The public mind is so active that improvement is heaped upon improvement with unexampled rapidity; and unless a person endeavors to keep "read up" in the published accounts of inventions and discoveries, he is sure to lose much and fall behind in useful acquirements.

The half-year just closed has, on the whole, been very prosperous for most manufacturers and mechanics; and invention has progressed with gigantic strides. The claims of no less than 1,729 new patents, granted by the Government Bureau at Washington, have been published in the columns of this volume; and the number of patents issued is a very fair test of the progress of useful discovery in any country. To this statement we can add another equally as reliable and gratifying, viz., that patentees have never been more generally successful in the sale of rights and in obtaining adequate remuneration for their inventions. This result is due in a great measure to a more just appreciation, on the part of patentees, of the necessity and value of having their inventions illustrated and brought to the notice of the public through the columns of the SCIENTIFIC AMERICAN. It is the only organ of American inventions and discoveries on our continent, and it is the source to which the public looks for reliable information relating to such subjects. As a matter of mere self-interest it behooves all who are interested in the progress of invention to consult its pages and carefully preserve their numbers for binding.

HOPEFUL CHARACTER OF NEW INVENTIONS.

Many persons have supposed that most of the inventions which engross public attention at present are of a warlike character; hence they believe that improvements in the useful industrial arts are not so numerous as formerly. This is a mistaken notion. Of the one hundred and eighteen new inventions which are illustrated in the present volume of the SCIENTIFIC AMERICAN, only seven relate to purposes of warfare. Improved machines and devices relating to every branch of the industrial arts have been illustrated; among these are reapers, cultivators, cow-milkers, horse hay-forks, churns, carts, lamps, water-wheels, steam engines, bridges, screw-jacks, wrenches, &c.; all of which afford evidence of the great variety of subjects to which the minds of our inventors have been directed. This is a most gratifying feature, because the prosperity of a country depends upon the progress of what are called "the peaceful industrial arts."

STEEL is hardened by being heated and then plunged into cold water. Brass is annealed (or softened) by the same process.

PRESERVING EGGS.

Since the "hen-persuader" has failed in its object, and fowls cannot be prevailed upon to lay eggs all the year round, it is advisable for those who are fond of eggs to preserve them in seasons when they are plenty. However close and compact the shell of an egg may appear to be, it is nevertheless full of minute holes and pores invisible to the naked eye. The effect of these holes is apparent in the decrease of the moisture of the egg, and the subsequent change in the contents occasioned by contact with the air. "As full as an egg is of meat" is an old saying, but in all stale eggs there is a vacancy proportioned to the loss they have sustained by evaporation. If the end of a fresh egg be applied to the tongue it feels cold, but in an addled egg it feels warm, because the albumen of the egg being in contact with the shell absorbs heat from the tongue more rapidly than the air-bubble in the fresh egg. If the pores of the egg-shell be kept closed, the contents must be preserved intact, as no change can occur, and the object is to close this atmospheric connection in the cheapest and simplest manner. Any kind of varnish will answer the purpose in one sense, but will defeat it in another; as eggs, being particularly affected by strong scents, would lose their delicate flavor by the odor of the coating. A better plan would be to employ beef suet or mutton tallow, provided the egg can be kept in a cool place. The eggs should be dipped in the fat and afterward wiped off, as any excess of grease over that required to fill the pores, would become rancid. After this the egg should be set perpendicularly, with the small end uppermost, and placed in a box filled with bran and tightly covered up. If the egg is laid on its side, the yolk will adhere to the shell. Charcoal finely pulverized is a good substitute for bran, as it is a deodorizer and will absorb any disagreeable effect that might be perceived from the grease. Some dealers are said to practice dipping their eggs in dilute sulphuric acid. This is a feasible plan, chemically, as the action of the acid on the chalky shell would deposit sulphate of lime in the pores and thus close the connection. Strong vinegar would doubtless answer as well as vitriol. Eggs acquire an unpleasant odor by coming in contact with strong-smelling substances, such as mahogany sawdust, lime-water, and musty straw; and the greatest care should be observed in having all the materials used each excellent after its kind. It is a common practice to preserve eggs in lime, but they are at best doubtful when so kept, and cannot be praised. An egg is very much like a razor—either excellent or else good for nothing; and those who preserve eggs for market would do well to give the above-mentioned recipes a trial.

FLAX RETTING.

The subject of American flax cultivation and the proper modes of preparing it for manufacturing purposes is still engaging much public attention. This is due to the great scarcity and high price of cotton, which far exceeds that at which fine flax sold when cotton was abundant. In former numbers of the SCIENTIFIC AMERICAN we presented information, at the proper season, relating to the preparation of the soil and the selecting and planting of flaxseed, and have nothing further to say upon these topics at present. We have been informed that more flax has been planted this year than at any previous period, as our farmers expect there will be a great demand for it. This expectation may be realized if care is bestowed upon securing the crops and treating the flax properly afterwards.

A very instructive little manual, on "Flax Culture and its Manufacture," has just been forwarded to us by its publisher—D. D. T. Moore, of the *Rural New-Yorker*, Rochester—in which are a number of essays and much useful information upon this subject. It contains several chapters by Mr. N. Goodsell, of Oswego county, N. Y., who has given much attention to the cultivation of flax, and who has visited some of the largest flax manufactories in Ireland and England. With respect to the time of pulling flax, he states that this should be done as soon as the stalks turn yellow, when the leaves fall freely from the stem, and when two-thirds of the balls have become brown. The stalks should be pulled, then made up into small bunches and set upon their butts to dry. The next operation is rippling—removing the seed—which is accomplished by thrashing with a flail, whipping the stalks upon stone flags, or drawing them through strong coarse hatchels.

The most important operation which follows is that of retting, which consists in treating the flax in such a manner that the gluten of the stalk in which the fiber is confined will be so decomposed as to permit the fibers to become loose and easily separated. There are two modes of retting; one by spreading the flax on grass exposed to the weather—called "dew rotting;" and the other by steeping it in water—called "water rotting." The former method is practiced in Kentucky in the treatment of hemp; the latter is the only mode practiced in Europe with flax. In no case can a good fiber be obtained by dew rotting; therefore those of our farmers who have planted flax this season should make preparations for water rotting it. In Belgium and Holland the flax is placed in ditches—the bundles being laid in inclined tiers with the butts downwards, and it is allowed to remain covered with soft water for about ten days. It is examined every day after it has been steeped five, so as to ascertain the progress of the process. When it is observed that the fibers draw out freely it is lifted immediately, as the fiber will be injured if it is over-retted. The bundles are next laid upon the grass, spread out and dried preparatory to the breaking operation.

In this treatise there is also a report of a committee of the New York State Agricultural Society on flax and its treatment, in which great stress is laid upon the proper mode of retting flax. It is correctly stated in this report that machinery cannot separate the fiber from the stalk without the retting process, and it says: "The only means of separating the fiber is to discover some solvent that has a stronger affinity for the cement than the fibers of the flax. Whoever shall be the first to discover such a solvent may exclaim, with Archimedes, '*Eureka!*' An ample reward in fame and in money awaits the discoverer, whoever he may be." We had supposed that such a solvent was generally known to exist in potash. It is a solvent of the gluten of flax, and does not act upon the fiber. Acetic acid is also a solvent, but it would be far too expensive to use. We have no doubt but flax could be retted in a superior manner in establishments erected for the purpose, in which it should be steeped in large cauldrons for one or two days in a cold dilute solution of potash, then heated up to about 212°, and suffered to remain at this temperature for several hours. The liquor should then be run off and the flax washed with hot water. The cauldrons for this method of retting flax should be heated by steam.

LEARN TO FORGE YOUR OWN TOOLS.

Many mechanics have an idea that after they have mastered the more legitimate duties of the workshop, they have learned all that is necessary, and can undertake anything in their line of business. Machinists particularly are prone to this error—a common one, by the way—and think that a knowledge of fitting and turning, once acquired, makes up for all other deficiencies. In reality, the self-styled finished mechanic is, paradoxically, the unfinished one; for he who acknowledges his shortcomings, and tries to correct them by obtaining all the information he can, will acquire a more thorough knowledge of his profession. Comparatively few machinists are competent to dress their own tools, or, indeed, handle the blacksmith's hammer on any work. How many times such knowledge would have been invaluable, we leave individuals to decide from their own experience. A simple weld which they were unable to make, a faculty for dressing chisels without putting their own eyes in danger by striking the anvil instead of the tool, would assuredly have stood persons ignorant of such details in good service in time of need. Apprentices who go to the tool-dresser to have the edges of their chisels or other instruments renewed, will do well to observe the process and inform themselves of it, instead of throwing coal at the helpers or otherwise conducting themselves in an unseemly manner. Observation and experience are twins and inseparable, and no youth or indeed any adult can hope to attain eminence or proficiency without paying some respect to the matters herein alluded to.