

almost to a fine art, let him look at this press, and get it explained by its courteous exhibitor, Mr. A. Campbell, who is generally present. Mr. Thomas H. Senior, *Sun* Building, New York city, is the general agent.

GRINDING MACHINES.

Mr. W. S. Jarboe, 93 Liberty street, New York city, agent of the Union Stone Company, Boston, exhibits an Universal Grinding machine, which is a very useful appliance in doing many kinds of work. The work is placed on a bench or truck, and the emery wheel is swung at will to conform to the straight or uneven surface. It is especially adapted for heavy work that cannot be easily handled. He also exhibits a hand machine for universal grinding of castings, etc. which have uneven surfaces, which is an ingenious and effective tool.

Another interesting exhibit is a machine for grinding paper or other long knives requiring to have a truly straight edge, the knives traversing by the emery wheel, and the grinding being performed in the most accurate manner. In all these machines, emery wheels made by the Sorel process are used.

STEEL CASTING TO PATTERN.

A case of various articles of steel, cast to pattern, is shown by the Union Steel and Iron Works, of Rhinebeck, N. Y. It is claimed that the process by which they are made is entirely novel in its character, and that by it all articles now forged from steel may be successfully made. The articles thus cast may be hardened or tempered to suit the work they are designed to perform; and the steel, being malleable when taken from the molds, may be, it is claimed, worked and tempered the same as tool steel. The specimens shown seem to indicate that these claims are not exaggerated. Should they become established in practice, this little case will be entitled to rank among the most important expositions of the present fair.

POTTERY.

The Jersey City Pottery Works show the process of manufacturing pottery. This evolution of forms of beauty from crude clay, by the agency of the time honored and primitive potter's wheel, has attractions second only to those of glass blowing, which forms a center of delight in another part of the building. The managers of the fair are wise in encouraging displays of this kind, which do far more to educate the people than the mere exhibition of products.

ANOTHER NOVELTY IN SEWING MACHINES.

The Lathrop Combination Sewing Machine Company, of New York, exhibit a decided novelty in sewing machines, which is almost as radical in its character as is the celebrated Lyall positive motion loom in weaving. This machine sews directly from two spools, making either the lock stitch, the simple chain stitch, or a beautiful French embroidery stitch compounded of the two. The looper is so constructed that one of the spools, sustained in a carrier which takes the place of the shuttle on ordinary shuttle machines, passes through the loop to make the lock stitch. The machine is most ingenious, and appears to work admirably. We hope soon to present engravings illustrating it, together with a minute description.

The Bickford Family Knitting Machine, several of which have been running at the fair since its commencement, deserves commendatory notice. It has no competitors at the fair, but notwithstanding the absence of opposition to add zest to its struggle for public favor, it attracts much favorable comment. It has, like Saxe's fisherman, a "very taking way," that seems to captivate the fair sex at sight, and it is really wonderful to witness the variety and beauty of the work it performs, as well as the speed with which the operation proceeds. It has made a decidedly good impression, and is one of the first class attractions of the fair. It is exhibited by Mr. Dana Bickford, vice-president and general agent, 689 Broadway, New York. The reader will find a detailed description of it, with illustrations, on page 367, Vol. XXIV. of the SCIENTIFIC AMERICAN.

EXTENSION DESIRED.

We echo a generally expressed desire that the date for closing the fair shall be postponed. The attendance still remains large, and, as it must be remunerative, we trust the wish for an extension will be regarded by the managers.

[Special Correspondence of the Scientific American.]

LARGE NUMBER OF PATENTS EXTENDED.

Washington, D. C.

Among the extensions recently granted are the following: To Stanley A. Jewett, for improvement in melodeons, reissued in 1864. The invention consists in graduating the sizes of the air chambers, above and below each reed, upon a geometric scale, by which an uniformity of volume of sound is produced; also, in producing a perfect *mute*, and in producing a swell and *diminuendo* by operating the swell valve by the bellows, without the intervention of a pedal, yet under the control of the performer.

To J. D. West, for an improved pump.

To G. J. Mix, for an improved iron spoon. The bowl and handle are made in separate pieces, cut and fashioned by a die, and then riveted. The invention consists in forming the rivet and handle out of one piece of metal, by which the manufacture is much facilitated and a better article produced.

To Samuel Darling, for a metallic square. The blade is tempered at the edges to prevent wear, and soft in the middle to prevent springing, and so united to the beam by soldering that there is no danger of its changing its position; a valuable invention by which a very durable and accurate instrument is produced. Formerly the tongue of the square was warped by being tempered throughout its whole extent, and had to be straightened before being fit for use, and the blade, being secured to the beam by rivets, was constantly

liable to be untrue or to be displaced through the wear of the rivets.

To Lauriston Towne, for machine for making ornamental chains. The links are cut from a strip of sheet metal, and then transferred to the bending and clinching mechanism, which locks them together, and thus builds up the chain. Prior to this invention, chains of this character were all made by hand, at an average price of fifty cents per foot, but on this machine they are manufactured for three cents per foot. The exclusive use of this machine in this country is controlled by Sackett, Davis & Co., of Providence, R. I., and since the patent was granted, they have made nearly 2,000,000 feet of chain, causing a saving to the public, on the above ratio of three to fifty, of about \$839,000. Four machines are leased to parties in Hanau, Germany. So valuable a machine is necessarily exposed to infringements, and, in this case, no less than ten different parties have pirated the invention and worked it secretly, until discovered and compelled by the Courts to cease the manufacture.

To A. B. Lotta, for a steam generator. This is the third extension granted to the applicant for devices connected with tubular coil boilers, which are specially useful in steam fire engines, where steam is required on short notice. The patent just extended was for a combination of a force pump receiving water from the jacket, and returning it to the coil, and a strainer box through which the surplus water, discharged from the coil, passes on its way to the jacket. In ordinary boilers, the salts, formed by heat and evaporation, settle at the bottom, and are blown off; but in case of rapid circulation, as in the tubular boilers, this becomes impracticable, hence the need and advantage of Lotta's strainer box. Mr. E. G. Maguire, who was chief engineer of the fire department of Cincinnati for many years, estimates that each of Lotta's patents is worth not less than \$20,000 to that city alone. The application in the above case is made by Finley Lotta, administrator of A. B. Lotta, deceased.

John Butler, for a gas generator. The gas is for lighting purposes, and is produced from resin. The invention consists in covering the bottom of the retort with a fusible metal, such as lead, which, becoming fluid, prevents a crust from forming on the bottom of the retort, and effecting a saving of fifty per cent. An ingenious and valuable invention. The rebellion having cut off the supply of resin, applicant has failed to reap a reasonable reward during the term of his patent.

William Plumer, for a rock drilling and cutting machine. It consists of an arrangement of devices, for cutting out pillars and blocks of stone, circular pillars of any diameter, and blocks either square, rectangular, or irregular shaped, the cutter working on all sides of the piece. A valuable invention, and some of its features have been incorporated in nearly all of the later stone cutting machines, but, by reason of sickness and service in the late war, applicant has failed to cover even the expenses of his invention.

To E. B. Bigelow, for wire weaving looms. Owing to the inflexibility of wire, the ordinary fly shuttle is too uncertain and weak in its action for this class of weaving, and is not adapted to straighten the wire as it comes from the reel or bobbin; and, prior to this invention, wire cloth was made by hand. Mr. Bigelow's shuttle is moved positively throughout its whole passage, and is provided with a wire straightener. The drag required to straighten the wire would draw in the selvage wires, and contract the cloth, but this is guarded against by an ingenious mechanism. Pointed upright bars are moved horizontally towards and from the selvage, also vertically up and down, by which they are alternately thrust between the filling wire and the selvage, so that the filling wire passes around them, and draws on them instead of on the selvage. The loom is also provided with a peculiar stop motion and also a double beat up of the lay. The Clinton Wire Cloth Company was organized to develop this invention, and has produced 11,444,059 square feet of cloth at an average cost of from three and a half to four cents per square foot less than hand made goods, making a saving to the public of \$400,652.05. A portion, however, of this saving should be credited to other inventions used in the manufacture.

The application of George W. Hildreth, of Lockport, N. Y., for an extension of his patent for a gang plow, has been refused. This patent was reissued last December. The leading features of the invention are these: crank supports, for adjusting the height of the frame from the ground; supporting wheels, so adjusted as to run upon different planes, one to run in the furrow and the others upon the sod; the axle made adjustable laterally; in brief, the axle has a triple motion, upward, downward, and lateral, and it also vibrates on the center bolt. This plow is well known on the Pacific coast, and has been manufactured by Baker & Hamilton, of San Francisco. It is claimed that it will plow from two to four acres a day more than a common plow. The applicant appears to have been unfortunate in reaping no profits from his invention. He says: "I am getting towards three score years and ten, and have had a hard up-hill business for years; and this gang plow business has contributed largely to my misfortunes." The extension was strongly opposed, and remonstrants claim that applicant has not used due diligence in introducing his alleged invention into general use, and that in his reissue he claims more than is his invention. A suit for infringement of this patent has lately been brought against Treadwell & Co., the damages being fixed at \$50,000.

It will be noticed that the Patent Office is disposed to be liberal towards all applicants for extension, and that in most cases of real merit, extensions are allowed without any close scrutiny of the profits that may have already accrued. Even the present limit of a patent to seventeen years is considered by many as too short, and it is not impossible that Congress

will either extend this period, or allow the Office to grant extensions to patents issued since March 2, 1861. In a late issue of your paper, I see that ex-Commissioner Charles Mason expresses the opinion that Congress, by special act, will extend many of the seventeen year patents, and that twenty-one years is not too long a period for their general continuance.

Among the recent visitors at the Patent Office (and no bureau or department is more inviting to strangers) we find the names of Mr. William and Mr. Alfred Carpmael, the sons of the distinguished patent lawyer of England, Hon. William Carpmael, the author of a standard collection of law reports of English patent cases. These gentlemen have made a thorough examination of our patent system, and of much of the office routine, and they have expressed themselves highly pleased. In England, at present, the subject of patents is undergoing considerable discussion in view of proposed changes, some favoring an entire abolition of this form of government protection, while others favor the adoption of the American law and our general official management.

NEW BOOKS AND PUBLICATIONS.

THE AMERICAN CHEMIST—Edited by Professors C. F. & W. H. Chandler of Columbia College, 49th street, corner 4th avenue, New York—to whom subscriptions should be sent—now rivals in interest and value the London *Chemical News*. Each number contains a large amount of information that no progressive chemist can afford to be without. The Professors Chandler are editing this journal with singular ability and judgment, and it has taken its place in the front rank of contemporaneous scientific publications.

THE ATLANTIC MONTHLY FOR NOVEMBER comes to hand richly freighted. The number is one of the best issued by its publishers, James R. Osgood & Co., Boston, during the present year. The article "Bedlams of Stamboul" is alone worth the price of the number. The leading article, "Tennyson and Theocritus," in which the styles of the ancient poet and the English Poet Laureate are compared, will be of great interest to students of *belles lettres*. The usual lighter literature and reviews are provided.

THE COMMERCIAL LAWS OF THE UNITED STATES. A Summary of the Laws relating to Arrest—Assignments—Attachments—Collections—Commercial Paper—Corporations—Depositions—Dower—Deeds—Damages on Bills—Execution—Exemption—Factors and Consignees—False Pretences—Homesteads—Imprisonment for Debt—Interest—Usury—Liens—Statutes of Limitation—Receivers—Redemption—Stay Laws—Partnership—The Rights of Married Women, etc. New York: Published at the Office of the "Banker's Magazine and Statistical Register," 23 Murray street. Sold by Baker, Voorhis & Co. Price, Three Dollars.

The exhaustive summary of contents of this book, embraced in the above title, relieves us from the necessity of characterizing its contents, except by way of commendation, of which it is highly worthy. It would be worth many times its price, annually, in the counting room of almost any business house in the country.

EXPERIMENTAL MECHANICS. A Course of Lectures, delivered at the Royal College of Science for Ireland, by Robert Stawell Bell, A.M., Professor of Applied Mathematics and Mechanism in the Royal College of Science for Ireland (Science and Art Department). With Illustrations. London, and 38 Bleecker Street, New York: Macmillan & Co.

This is a magnificently printed, illustrated, and bound octavo volume comprising twenty lectures (some of them revised and rewritten), delivered at the above named institution of learning, to artisans and others unable to attend the ordinary classes. As specimen lectures in which science is popularized, they are models. While, of course, they do not take the place of a full treatise on mechanical science, they form an outline easily comprehended by ordinary readers, and really embracing the fundamental principles of the subject. If a mechanic has once mastered these, there is little danger of his being led astray into absurdities in his practice. The style of these lectures is such as to at once attract and sustain the attention of the reader, and no father could make a more valuable investment for the price (six dollars) than to place the volume in his family library.

A TREATISE ON THE RESISTANCE OF MATERIALS, AND AN APPENDIX ON THE PRESERVATION OF TIMBER. By De Volson Wood, Professor of Civil Engineering in the University of Michigan. New York: John Wiley & Son, 15 Astor Place.

This is a thorough investigation of the resistance and strength of materials in the various forms and under the different circumstances in which they are applied in civil and mechanical engineering. It has been prepared by an author of distinguished ability in his field of labor, and is rich in tables and formulae for reference. In this place it would be impossible to give any thing like a suitable review of the work, and we shall therefore supplement this notice by some extracts which will give our readers a taste of its quality. The volume is a handsome octavo of over 200 pages, with an appendix, but, we regret to say, while giving a full table of contents, is devoid of an index. This, while it matters little in a work used solely as a text book, limits the usefulness of the treatise as a work of reference.

ANCESTRAL TABLETS. A Collection of Diagrams for Pedigrees, so arranged that Eight Generations of the Ancestors of any person may be recorded in a connected and simple form. By William H. Whitmore, A.M., Member of the New England Historic-Genealogical Society. Second Edition. Boston: William Parsons Lunt, 102 Washington Street.

This is, undoubtedly, the most complete, direct, and easily understood system of genealogical diagrams ever devised. Those who are interested in tracing back their ancestry, or in the recording of pedigrees, will find it very useful. We cannot spare space to describe the ingenious method adopted, but recommend our readers to examine the system for themselves.

CATALOGUE OF PRACTICAL AND SCIENTIFIC BOOKS. Published by Henry Carey Baird, Industrial Publisher, 406 Walnut St., Philadelphia. Sent free on application.

This enterprising publisher is constantly extending his catalogue, which now embraces works on almost every known industrial subject. The mechanic, engineer, chemist, farmer, and teacher, may each find, in its enumeration, works which constitute the most valuable aids to each avocation. Full descriptive tables of contents of the works are given, so that there is no difficulty in selecting the precise work needed. It is worth the trouble to send for this catalogue, if only to see what an amount of talent has been enlisted by Mr. Baird to supply industrial information to the workers of the United States.

SCRIBNER'S MONTHLY FOR NOVEMBER is a beautiful number, finely illustrated, and containing much useful as well as entertaining reading. This deservedly popular monthly is achieving, we are glad to learn, a brilliant success, and it has undoubtedly a brilliant future in American literature. The Hell Gate improvements form the subject of a very instructive and interesting article, profusely illustrated, which appears, to our mechanical mind the gem of the number.