Scientific American.

laws, well disciplined armies, systematic civil polity, religion and ornamental art. Several thousand years elapsed before this beneficent industrial spirit, which had first taught the savage to fashion tools of stone and then elevated him to the bronze age, raised him to the age of iron by teaching him to smelt, forge, temper, and weld the most useful of all the met. als. If the useful arts had done nothing for man but to teach him how to work stone, bronze, and iron, they would deserve the credit of laying the indispensable foundation of all our culture, and thus doing more for us than any other branch of human employment has done. But their service did not cease there. It has continued and still continues with increasing beneficence. If we divide culture into a dozen eras instead of three, the stone, bronze, and iron ages, we should have to designate nearly all of them from industrial events. The sailing vessel, the mold board which turns over the furrow of the plow, the water wheel, the magnetic needle, gunpowder, the paper mill, movable type, the spinning wheel, the telescope, the quadrant, the chronometer, the steam engine, the steam boat, the steam railroad, the steam blast in smelting furnaces, the puddling furnace, the rolling mill, the laborsaving machinery of a thousand kinds-these are triumphs of industry, and the main causes of the superiority of modern over ancient civilization. It is the workingman, not the soldier, the priest, the statesman, the philosopher, the scientist, the artist, or the author, who has given us not only the foundation, but also most of the superstructure, of our culture.—Overland Monthly.

TO NEW SUBSCRIBERS.

All subscriptions to the SCIENTIFIC AMERICAN will be commenced with the year, unless persons, at the time of remitting, request to the contrary. Nearly all subscribers preserve their numbers for binding; and in most cases where subscriptions are received during the first quarter of the year, if the back numbers are not sent, they are subsequently ordered. To save both the subscribers and ourselves trouble, the back numbers from January 1 will be forwarded, unless we are advised to the contrary. This course will be pursued till April 1, after which date the paper will be sent from the time of receipt of remittance; but subscription. may commence at any time, at the request of the subscriber, The above regulation applies only to those who give no instructions, at the time of remitting, as to when they desire to commence.

Death of the \$40,600 Cow.

The celebrated Eighth Duchess of Geneva, the short horned cow to which we have already referred as bringing the enormous price of \$40,600 at the sale of Mr. Campbell, at New York Mills, recently died in giving birth to a calf. It will be remembered that the animal was purchased through a mistake by the agent of a noted English cattle breeder, and subsequently resold to Col. Lewis G. Morris, of Fordham, N. Y., for \$30,600. The loss is not only a heavy one pecuniarily, but a severe disappointment to the latter gentleman, as it was his object to use the cow as a means of materially improving the breed of short horned cattle in the United States. Col. Morris has still a large fortune invested in choice stock.

NEW BOOKS AND PUBLICATIONS.

HEAT AS A SOURCE OF POWER, with Applications of General Principles to the Construction of Steam Generators. By William P. Trowbridge, Higgin Professor of Dynamic Engineering in the Sheffield Scientific School of Yale College, Price \$3.50. New York: John Wiley & Son, 15 Astor Place.

Professor Trowbridge has succeeded in producing a workwhich.we think cannot but be of much benefit to every student of mechanical engineering. It is intended as an introduction to "The Study of the Steam and other Hea: Engines," and, as its title indicates, is devoted to the careful discussion and thorough elucidation of the steam generator. The various types of the atterarefully considered, and their theoretical and practical construction explained. The initial chapters on heat, combustion and fuel, are admirable treatises on their respective topics, clearly written, and containing the the most soproved formulæ and rules. There are numerous illustrations and a brief appendix, with tables, &c. The volume is eminently practical in its tendency, and will form a valuable hand book for the professional engineer.

THE CONSTANTS OF NATURE. Part I. Specific Gravities, ington, D. C. : Smithsonian Institution.

of the Mechanical Arts," etc. Each Volume, 75 cents.

Higher and Middle Schools. By W. B. Kemshead, F.B.A.S., F.G.S., Lecturer at Dulwich College, London. 75 cents. ELEMENTS OF ZOOLOGY, for Schools and Science Classes By M. Harbison, Head Master of the Newtownards Model School. 75 cents. These volumes form parts of the admirable "Elementary Series" issued by Messrs. G. P. Putnam's Sons, corner of Fourth avenue and 23d street Like the previous volumes published under this head, they are practical lucid, and concise, and may be relied on as accurate treatises on their respective subjects. thereby. Messrs, B. K. Bliss & Sons.of 23 Park Place. New York city, forward us the nineteenth edition of their illustrated spring catalogue of seeds. plants, etc., with supplement for 1874. The book contains a descriptive list of some 2.000 varieties of flower and vegetable seeds, a number of beautifully colored lithographs of flowers, etc., find an immense number of excelent engravings. There is beside a large amount of valuable in formation upon the subject of gardening generally, which will render the The state of the set o volume a useful guide both to the amateur and the professional gardener. The price is but 25 cents. The same firm also issue an abridged catalogue containing an almanac for the year and useful bints for every month. This is mailed on receipt of two three-cent stamps. The catalogue of potatoes for seed, which is forwarded free, has practical remarkson potato culture andfuli descriptions of many new and excellent varieties. The advertise ment of, the above enterprising fim will be found on the last page of this

PATENT OFFICE DECISIONS.

United States Circuit Court-District of Massachus setts.

ADAMS ELECTRO-NICKEL PATENTS .- UNITED STATES NICKEL COMPANY DE

N. SHEPARD ERITH. [In equity.-Before Shepley, Judge.-October Term, 1873, to wit, February

13, 1874.]

The defendant is charged with infringement of letters patent of the Jaited States.granted to Isaac Adame, Jr., for "improvements in the elec-ric deposition of nickel," dated August 8, 1869, and May 10, 1850, both of rolch patents have been duly assigned to the complation rus. Respondents den y the infringement, and slieve that Adams was not the rightal and first inventor of what is claimed as his invention in either of he natents.

The deposition of the state of the safe need to the complanes is. Respondents deny the infringement, and silege that Adams was not the original and first inventor of what is claimed as his invention in either of the patents. The history of the state of the art of electropiating with nickel, or what should with more propriety. In view of the progress then made in the art, be denominated the elect odeposition of nickel, prior to the discoveries of Dr. Adams, is sufficiently given, in the opinion of this court, in the case of Dr. Adams, is sufficiently given, in the opinion of this court, in the case of United Nickel Coompany by Anthes. Out additional evidence has been in-troduced in the record in this case. Much additional evidence has been in-troduced in the record in this case upon the issue of novelty. Yet, siter a careful review of the whole evidence, both in relation to What was alleged in the conviction that the electro-deposition of inckel by means of the dis-coveries of the state discoveries and inventions of Dr. Adams, and is again alleged in this record, ascompanied with further proof, as well as what additional and new matter is here introduced. I am confirmed in the conviction that the electro-deposition of metals, prior to the dis-coveries of the ostente. By electro-plating of metals, prior to the dis-coveries of the ostente. By electro-plating of metals, prior to the dis-guity, uniformity, cohere 'cc, and permanency of adhesion, as distin-guity, uniformity, cohere 'cc, and permanency of a sheelon, as distin-guity, uniformity, cohere 'cc, and permanency of a sheelon as distin-but of the surface of basermetals, mine the constate the surface of another metal. And herein, in my view, consista the difference in the state of the art prior and subsequent to the doscoveries of the patentee. Prior to his discoveries and investion, electropicters and electro-metal-lurgists well underatood how desirable a resuit it would be to be able to plate the surface of basermetals wi plate the surface of basermetals with a coating of nickel, resembling sli-ver in luster and color, without its isbility to transh on exposure to the air. Yet while it was thus well understood, as stated by Nagler, that if the practical difficulties could be extrasive, and the property of not being able to tarnise would make it eminently useful for all general purposes; yet, with all the research and investigation which have been so luvishy bestowed on this case, the respondents have signally failed to show that electropisting of metals with dickel had any practical existence as acces-while on beneficial to the public before the date of the inventions of Dr. Adams. Since that time, under the processes described in his patent, the artis & extensively practised, both in this country and Lirobe, that, as stailed by on eof the witnesses in this case, it would be leve them nickel-plated than those to which nickel-plating has been applied. The claims in the two parents are as follows: In the patent of August 5, 1869: 1. The electro-deposition of nickel by means of a solution of the double sulphate of nickel and ammonia, or a solution of the double chloride of nickel and ammunium, prepared and used in such a manner as to be free from the presence of poten, soda, alumina, lime or nitric acid, or from say acid or atkaling reaction. 3. The use for the anode of a depositing cell of nickel, combined with fron, to prevent the copper and arcsic which may be present from being deposited with the nickel of from the artis of corrosive agents with which the article may be brouget in contact. Also, but which is not involved in this suct. 5. The deposition of electropiates of nickel, to be removed from the sur-face on which the deposit is made, and used separately therefrom. In the batent of May 10, 1870. the claims are as follows: 1. The combination with nickel to be used for anodes, of a metal or metal-loid, electro-negative to the nickel in the solution displayed. 3. A nickel anode, combined with carbon and cast in the requ

liminated from the solution in use by evaporation. Decree for injunction and account as prayed for in the bill.

DECISIONS OF THE COURTS.

United States Circuit Court-Southern District of New York.

PATENT PAPER BAG MACHINE.—THE UNION PAPER BAG MACHINE COMPANY

et al. vs. G. L. NEWELL AND G. H. MALLARY. [In equity.—Before Blatchford, Judge.—Decided November 26, 1873.]

This is an application for a preliminary injunction, to restrain the de-fendants from infringing letters patent arbited September 12, 1865, to Ben-jamins B. Bunney, assignee of B. W. Goodalle, the laventor, for a "machine for making paper bags." As the claim of infringement on this applica-tion is confined to the first claim of the patent, only such parts of the measurement. The specification is related to that claim. The specification measurement of the specification of the specification of the measurement of the specification of the specification is the specification for the measurement of the specification of the specification for the measurement of the specification of the specification is the specification for the specification fo

"Pecification meet be reserve to as its to be side catters an irregular "This invention consists, first, in giving to the side catters an irregular curve at or near their inside eads, fisuet a manner that the form of the paper cut by their action, and the corners produced by folding said paper, are of such a shape that the paste shall come upon the paper where it is single, and thus be enabled to hold better thanit does when it is appled in the ordinary way. It designates as "side cutters" the cutters "whichserve to cutthe paper so that the eides may fold and make the seam in the center of the bag."

so that the sides may fold and make the seam in the conter of the vex. It says that These cutters or knives are bent in an irregular curve near their inner ends, so that the paper cut by their action, and the corners produced by folding said parter, are such that the passe shall come upon the paper where it is sligge, and that it will hold totter than it does when applied to the figures in the drawings contains lines which are said, by the specification, to designate the cuts made by the side cutters. The first claim(at these words: Making the side cutters, B, with ourved ends, substantially as and for the numbers of forth.

specification to descure the cute made by the subschrest. In emist claiming in these words: Making the side cutters, B, with ourved ends, substantially as and for the purpose set forth. If the defendants' machine there are cutters which serve to cut the paper. So that the side may fold and make the seam in the center of the bar. They are s de cutters. They make a cut of a definite sengitiron the outside dige of the Paperin ward to ward the center, so as to leave flaps or side pieces, which are then to be folded over from each side to ward the center, overlapping each other at the center, and making seam in the center. The defendants' side cuters are not straight or unbent in their whole length, nor are they bent at an angle near their inner ends; but they are bent in a curve near their inner ends. The deficit of this curre is that, when the side pieceaser folded over, the central end piece, of a single thickness of paper, may be pasted down without folding over, in addition such single thickness, any part of the douls thickness formed by folding the sides, and yet the corners will be perfectly close and tight. This result is one to the curve near the inner ends of the side curters in contradistinction toan angle there. Where the cuttershave an angle there, and the centers and the corners, and, to make tight corners, it is necessary to fold down part of the double thickness, are shown without folding over. In addition, any part of the double thickness, there are holes of the there one, tend to draw the inper one away from the surface to which it is pasted. This is precisely what is doue by the patenters as a rangement, when he says that the form of the paper, are of such a shape that the pastersha to mean the paper on the single, and thus hold better (hawhen applied to the avent where it is single, and the shold better flatwhen applied to the areal by a person skilled therein. It is to be noted that the body of the sate of the arb by a person skilled therein. Boiling and Melting Points, and Chemical Formulæ. Compiled by Frank Wigglesworth Clarke, S. B. Wash-A volume of tables, complied with great labor and research, of the gravi ties of pearly all known elements and compounds. The work is thoroughly well done, and the book will be found useful in every laboratory. BUILDING CONSTRUCTION: BRICK. BUILDING CONSTRUC-TION: TIMBER. Each Two Volumes (Text and Plates). By Robert Scott Burn, C. E., Author of "The Handbook of the driving shaft. INORGANIC CHEMISTRY, for Use in Science Classes and

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IMPORTANCE OF ADVERTISING.

The value of advertising is so well understood by old established business irms that a hint to them is unnecessary; but to persons establishing a new business or having for sale a new article, or wishing to sell a patent, or find

a manufacturer to work it : upon such a class, we would impress the importance of advertising. The next thing to be considered is the medium through which to do it.

In this matter, discretion is to be used at first; but experience will soon determine that papers or magazines having the largest circulation, among the class of persons most likely to be interested in the article for sale, will be the cheapest, and bring the quickest returns. To the manufacturer of all kinds of machinery, and to the vendors of any new article in the mechanical line, we believe there is no other source from which the advertiser can get as speedy returns as through the advertising columns of the SCIENTIFIC AMERICAN.

We do not make these suggestions merely to increase our advertising patronage, but to direct persons how to increase their own business.

The SCIENTIFIC AMERICAN has a circulation of more than 42,000 copies per week, which is probably greater than the combined circulation of all the other papers of its kind published in the world.

Becent American and foreign Batents.

Improved Locomotive Driving Wheel.

Joseph C. Wilson, Oshkosh, Wis., assignor to himself and Mahlon P. Barry, same place.-This invention consists in a driving wheel formed of an inner and an outer wheel, of which the former sustains the weight of the locomotive on its hollow shaft, and revolves along the inside of the tyre of the outer wheel, the solid shaft of which passes through the hollow outershaft. The addition of the holiow shaft, it is claimed, adds greatly to the strength of the locomotive axle, and the working of the inner wheel in the outer increases the driving power considerably by economizing in the wear and tear of the tyre, and otherwise.

Improved Apparatus for Converting Motion,

Romulus R. Stevens, Stockton, Cal., assignor to humself and Lewis M. Cutting, same place.—This invention consists of a reciprocating toothed barabove the axis of the shaft to be driven, and another below it, in dif-ferent planes, connected together by yokes. With these are combined a toothed wheel on the shaft, and apparatus for shiftin the bars at each end of the st oke to chaug them, so hat one turns the wheel going one way, and the other whengoing the other way, thus giving continuous motion to the wheel. The invention also consists of a cam and spring, so combined with the shaft as to expend some of the excess of the power of the pisson at mid-stroke on the spring, and return it to the shaft during the 1 tter portion of the stroke, when the effect of the steam is diminished, to equalise the application of power. By this arrangement, it is believed, power may be largely economized, because the application of it is always at the rims of the toothe i wheels; also because the balance wheel is dispensed with, and the engine enabled to run slower, as compared with the spet d

Improved Pump.

Thomas Wilmington, Ossian, Ind .- This is a double acting lifting pump, having two cylinders made in a block of wood, with a metallic water chamber above the cylinders, or resting on the block. A plate on top of the chamber has a valve orifice, which is closed by a valve. Above the valve is another metailic chamber, which is covered by a plate, to which the delivery pipe is attached. The lower valves are seated on the plate beneath the block, to which plate the induction pipes are attached. The bucket rods pass through stuffing boxes, and extend up to the top of the stand, where they take hold of the ends of two vibrating bars. The bars work on a pivot rod, which passes horizontaily through the top of the stand. and their ends extend back from the pivots, and enter loosely the ends of the cross of the working lever. The working lever is vibrated on the pivot in the top of the stand, and motion is imparted to the pistons Improved Boot Pac. James A. Weaver and William B. Hawkins, East Saginaw, Mich .- The sole leatherboot pacs worn by lumbermen and other woodmen, and known as "tongue par ." have heretofore been made with seams at the quarters: also with seams from the top of the upper, a little each side of the instep, along the sides of the top of the foot, to the top of the toe, thus making the upper of three pieces, which require several seams for sewing them together. It is now proposed to make the whole upper in one piece, which is joined together at the heel by one short seam only. The latter is thus located where it is so re-enforced and stiffened by the counter that it is notso liable to open and leak when the leather is water-soaked. The log s sewn to the upper, so that its seam does not join the upper at the seam of the beel of the latter, so that the tendency to open at the junction is