

A "Nose Competition" at Milan.

The nose has at all periods of their history possessed a peculiar significance for Italians, says 'The London Lancet. As a symbol of intelligence it figures in familiar speech ancient and modern, a "homo nasutissimus" being Seneca's equivalent for a very clever man and "Naso" a name held in honor by the Otacilian, Octavian, Ovidian and Voconian "gens," while "Nasica" was a cognomen of the Scipios, one of whom, Publius Scipio Nasica, was, as the most virtuous man in the state, chosen to accompany the image of the Mater Idæa to Rome. In the Italy of to-day "aver naso" and "esser di buon naso" (to have nose, to be of good nose) are the first of a series of phrases all turning on that feature in its symbolic sense, and giving rise to proverbs infinite in the variety of their application. The great Napoleon was true to his Italian origin in his preference for a "big nose," and the late Lord Beaconsfield, descended from Venetian Jews, never concealed his scorn for the "flat nosed Frank." He held, in fact, that to be "simus" was the first step toward being a "simia" or ape—a "retrocession in evolution" admitted by some among the "facts for Darwin." Such a horror have Italians of any lesion costing the face its nose or robbing the latter of its due proportions that rhinoplasty among them has long been one of the "surgical fine arts," and the great Bolognese anatomist Tagliacozzi (1546-90) has for all time given his name to an ingenious method of replacing the feature when lost. Quite in keeping, therefore, with all precedent as well as with the fitness of things, it is in Italy that we find the "cult of the nose" as vital as ever, inasmuch that within the last seven years she has had two "Concorsi di Nasi" (or nose competitions) in which the owners of the feature received prizes according as they could present it in greatest perfection as regards type, size, beauty and olfactory power. The former of these "concorsi" was held in 1891, at Padua, on the initiative of the students of that medical school, and the citizens were invited "con scheda segreta," by universal suffrage and secret voting, to name the possessors of "i nasi più sviluppati e rispettabili" (noses the most pronounced and respectable) of the ancient Venetian town. The prizes, consisting of pocket handkerchiefs and snuff-boxes, were in due course awarded by plurality of votes. At Milan, and quite recently, a much better ordered and more conclusive competition of the same kind has just come off, the whole proceeding being

controlled by a committee and the "examinations" conducted in a "Nasoteca" furnished with drawings and water colors of heads well provided with noses, such as would have gladdened the artistic sense of William Hogarth. The competitors numbered thirty-six, but not more than twenty-three appeared before the "examiners." The first prize (gold medal) was won by a Venetian, Fortunato Michielutti by name, a "proporzioni inquietanti, lungo, deciso, ardito, tagliente come una lama di coltello" (formidable proportions, long, well-pronounced, aggressive, trenchant like a knife blade). The second prize fell to one Antonio Pozzi, possessed of a nose "prepotente, presuntuoso, con nari larghe e cavernose" (domineering, assuming, with nostrils wide and cavernous). The award for this was a medal in enamel; while the third prize (a silver medal of the first order) was adjudged to Carlo Ascari for the refined, symmetrical proportions of his nasal feature. The last two prizes (the fourth and fifth, silver medals of the second and third order respectively) were given for a nose "without pretension, ingenuous, but solid and well planted," and for one "considerable, regular and worthy of respect." The candidates who were unsuccessful—perhaps "plowed" would be a more suggestive word—shared the festivities with which the committee concluded its labors; and so the "Concorso di Nasi" became a thing of the past, till the "Buon-temponi" (merry makers) of a future year or another city think fit to revive the harmless, not inartistic, though dubiously "scientific," competition.

How the Brain Works.

A committee of British physicians, acting jointly, has for some years been giving particular attention to this topic, and their researches, though not yet altogether complete, already show some very interesting results, which, taken together with those of investigators on the Continent, let us see a long way into the intricacies of the brain.

It has shown unequivocally, for example, that a brain cell, which is the really important part of the brain, actually loses part of its substance during action. The brain cells of persons and of animals that have died during a period of great exhaustion from overexertion are found to be greatly changed from the condition of the normal cell during times of health and vigor. The cell of the exhausted brain, instead of being

plump and full of nervous matter, is found to be hollowed out or "vacuolated," a cavity within its substance having formed and being filled with water. This means that a part of the cell substance has been actually consumed during the time of brain activity, precisely as coal is consumed when one gets heat from a furnace.

It is found, further, that if an animal whose brain cells are thus exhausted is permitted to rest and to sleep, its cells rapidly recuperate, new material being supplied from the blood until the vacuolation has disappeared and the cell is practically as good as new again. This explains why sleep is necessary to our existence. During waking hours our brains are literally worn away, and sleep is the state during which the repair shops of the brain make good the damage of the waking hours. Thus the brain of a person who suffers from insomnia is in the condition of a locomotive which is run night and day without going to the repair shops. Disaster must ultimately result.

It is not sleep alone, however, that rests the brain cell, though sleep is absolutely essential to recuperation of the brain as a whole. But not all parts of the brain are involved in any one kind of mental effort. The blood supply of the brain is so arranged that, by expansion or contraction of different arteries, parts of the brain may be flushed with blood and other parts dammed off, so to speak, somewhat as the various currents of an irrigated field are regulated by the gardener. And as a rapid flow of blood is essential to great mental activity, this means that one part of the brain may be very actively at work while another part is resting and recuperating.

Thus it is that a person suffering from brain fatigue may leave his desk and go out into the fields, or on the highways with a bicycle, and by diverting his mind give the overworked cells a chance to rest and recuperate.

But it must not be overlooked that such exercise involves other brain cells, which in turn become exhausted; and that in the end, for the recuperation of the brain as a whole, sleep is absolutely essential. No recreation, no medicine, no stimulant, will take its place. The man who does not give himself sufficient hours of sleep, or who is unable to sleep when he makes the effort, is literally burning away his brain substance, and can no more keep on indefinitely in this way than a locomotive can run on indefinitely without getting fresh supplies of fuel.—San Francisco Call.

RECENTLY PATENTED INVENTIONS.

Mechanical Devices.

MACHINE FOR SUPERPOSING CLOTHS.

—Henri Édouard Couzineau, Lille, France. Briefly described, this machine comprises an endless carrier or apron, partly solid and partly open, mounted to travel over a table or other support. The apron is provided with a clamp or other suitable holder for the free edge of the cloth or other material, and an abutment secured to the table or frame is adapted to engage the holder to open it. The material is first seized by the holder and drawn on the solid portion of the apron. Then the holder or clamp opens to release the material, which remains stationary. The apron continues to move, and gradually its open portion comes under the material, finally allowing the latter to drop through the opening of the apron on the lower layers or folds of the material. The material is then cut and the operation repeated.

ROPE-MAKING MACHINE.—Harry I. Hansen, Boonton, N. J.

In this rope-making machine a bar of the fier is provided with a longitudinal slot in one face and a wider longitudinal slot in its opposite face, together with a longitudinal rib extending along the wider slot and stopping short of its ends, the walls of the wider slot being provided with teeth. A traverse is mounted to travel on the bar of the fier and has a guide wheel arranged to enter the annular slot in the bar. A driving wheel is held in engagement with the toothed wall of the wider slot. The yarn or rope is carried over a pulley. A driving connection is provided between the pulley and the driving wheel of the traverse. By this machine a ready means is provided for removing or introducing the bobbin in the fier. The feed-cone can be removed and larger or smaller ones substituted. A support is provided for the outer end of the shaft on which the bobbin turns, which support can be quickly and easily manipulated.

Miscellaneous Inventions.

TABLE.—Alfred N. Heine and Gustav A. Nonweiler, Evansville, Ind. With a table top are connected rails cut away at the top at their meeting ends. A leg has a projecting plate on its upper end to engage in the cut-away portion of the rails and a diagonally extending bridge is secured to the under side of the table top and is notched in its upper edge. A wedge is designed to pass through the notch and engage with the leg, and a block is provided for holding the wedge tightly against the leg and its plate.

WINDOW-SHADE.—John S. Judge, Peterborough, Canada. This window shade consists of a series of slats pivotally connected together and arranged in pairs, each pair of slats at opposite ends being provided with roller bearings spring-pressed in an outward direction. The window frame is provided with a tubular guide formed with a longitudinal slot. Tension devices in the guide are connected through the slot with sundry of the slats, whereby the slats may be held at any desired height.

BACK-REST FOR VEHICLE SEATS.—Eugene C. Alford, Portland, Ore. In this rest for vehicle seats, the seat is connected with a back-rest ranging

transversely at the rear of the seat, two braces being attached to the back rest and extending downward and pivotally mounted on the seat at the rear portion thereof. Two rods are pivotally connected with the respective ends of the back-rest and extend forwardly. The rods are furthermore respectively slidable in two cylinders mounted at their front portions to swing at the respective sides of the seat. A spring is contained in each cylinder and presses against the rod therein.

VALVE.—Mathew Abt, New York city.

The object of this invention is to provide a valve for steam heating radiators whereby the inlet and outlet valves may be simultaneously operated, obviating the danger of leaving one valve open and the other closed. The valve comprises a casing with two chambers separated by a tubular guide. A nut movable in the guide forms a closure for slots on each side of the chambers. Arms integral with the nut extend through the slots and are connected to the valves of the inlet and outlet openings. A screw rod engages the nut and by its means both valves are simultaneously opened or closed.

STOVE.—Ernest C. Cole, Council Bluffs, Ia.

The improvement of this inventor is chiefly concerned with the ash-pit and elbow-door. The object of the inventor is to secure a tighter connection of the elbow or jamb with the body of the stove. A sheet-metal collar is forced into a cast-iron elbow and is secured within the latter at a point remote from the extreme heat. By this construction the contact between the sheet-metal collar and the sheet-metal stove-body is tight, because in both parts the expansion will be equal. The invention also seeks to overcome the difficulty resulting from the projection of hinge-studs above the surface of either the door or jamb and permits the grinding of the door and jamb to an air-tight fit on the surface of a grinding wheel. By reason of the double hinge-joint the two surfaces can adjust themselves to an air-tight fit in spite of great variations in grinding off the surfaces or in drilling sockets for hinge-pins, which variations constantly occur in such work.

MITER-SAW GUIDE.—Hamilton Weir, La Porte, Ind. This miter-saw guide comprises a cap-plate having a curved slot, a hanger to which the cap-plate is jointed, a main-plate pivoted to the cap-plate and movable thereon to different adjustments, a screw for securing the main-plate in its different adjustments, clamp-sections hinged together, a spreading device by which the clamp-sections may be adjusted, and ribs or rails by which the moving clamp-sections are held to the main-plate.

DISH-CLEANER.—Robert R. Parry and Edwin Evans, Poulney, Vt. According to this invention, a dish-washing machine, comprising a reservoir, is provided with a cover and carrier rings mounted to rotate in the reservoir and cover. Means are also provided for raising and supporting the carrier rings above the water in the reservoir. A series of open-work receptacles contain the dishes to be washed, the receptacles being arranged to conform to the interior of the carrier rings. A brush is secured to the carrier rings and the dishes are held in the reservoir outside the carrier. With this machine the labor of dish-washing is much reduced,

and the reservoir and cover being closed during the operation, there is no discomfort from rising steam.

POTATO-BUG DESTROYER.—Christian Nelson and Henry F. S. Justeson, Arrowsmith, Ill.

The object of this invention is to provide a machine which may be quickly adjusted between rows of vines and by means of which the bugs may be removed without tearing or breaking the vines. The machine has a platform which is placed between two rows of vines, the platform having laterally sliding sections curved upward at the outer edge. Longitudinally tapered gathering rollers at the sides of the platform project with their forward ends over the vines at the side opposite to that in which the platform is placed. Means are provided for rotating the rollers. Crushing rollers extending along a slot longitudinally formed in the platform receive the bugs as they drop on the platform and kill them. The edges of the fixed plates of the platform keep the rollers clean.

BANJO-BELL.—William J. McLean, New York city.

The improvement provided for by this inventor consists in forming a flange about the central opening in the bell and attaching thereto a flange or ring which is adjustable, so as to vary the thickness of the device and accommodate it for insertion in different banjos in which the distance between the head and the neck extension varies.

WINDOW-SCREEN.—Bennett J. Kolb, Florence, Ky., and Michael Kolb, Newport, Ky.

A netting or screen in this invention is made to wind on a screen-roller contained in a casing. The casing is formed with a slot for the passage of the screen and on its end is provided with a removable cap. A rod is secured to this cap and extends into the roller. On the rod a spring is coiled and secured at one end to the rod and at its other end to the roller. A bearing on the cap is provided on which the roller turns.

PROCESS OF CLEANING AND DRYING EGGS.—John A. Kunkel, New York city.

This process for cleaning and drying eggs without injuring them consists in cleaning the eggs in a weak solution of a vegetable acid, as vinegar, and soda, in water having cornmeal stirred therein, and then drying them in cornmeal.

SAW.—John I. Caruthers, 156 Fifth Avenue, New York city.

This invention has for its object the provision of a saw with the teeth so arranged as to cut during both the back and forth movements and also so arranged as to clear the kerf of sawdust. The saw has the front sides of its teeth arranged at a slight incline relatively to the blade and the rear sides arranged at a greater incline. The teeth are beveled outwardly from their longitudinal centers, the inner end of a tooth engaging with and terminating at a point between the inner and outer ends of the front portion of an adjacent tooth.

BOW-FACING OAR.—Thomas H. Brosnihan, Livermore Falls, Me.

The object of this invention is to provide improvements whereby the operator can readily manipulate the oars to insure a proper and easy propulsion of a boat with a minimum exertion on the part of the operator. The device consists principally of a rock-frame, an oar holder pivoted on the frame, and a connection of special construction between

the handle and the oar holder to impart a swinging motion to the same.

VACUUM PAN.—Henry G. Boswell, Lihue, Kauai, Hawaii.

This vacuum pan is designed for use in sugar-making, and by its means the liquids carried by the vapors in the generating pan are readily separated from the vapors and the latter are not collected in the pan or obstructed in their passage from the pan to the condenser. The pan has an outlet orifice and a number of depending cup-shaped screens fitting one within the other and spaced apart from one another. The screens are foraminous at the bottom and sides and arranged under the orifice and within the vacuum pan. The vapors passing from the pan will thus be separated from the liquids that may be therein suspended.

PRIVY-STOOL.—William G. Bliss, Constantinople, Turkey.

The object of this invention is to enable a person to avoid personal contact with frequently foul and sometimes infected seats, the invention at the same time permitting the stool to be used in the ordinary manner, if desired. The stool is provided with the usual basin, and a pan or tray having an opening is mounted on the basin, so that the opening will register with the basin. The pan or tray is extended horizontally beyond the sides of the basin and has a smooth top surface inclined gradually toward the opening in the pan or tray. Two series of parallel ribs are formed on the top surface of the pan or tray at the horizontally extended portions thereof and located one series at each side of the opening therein, such ribs forming raised gratings on which the feet of a person may rest. A weighted seat is horizontally mounted adjacent to the basin and normally extends perpendicularly to expose the pan or tray, the seat being capable of swinging downward to cover the pan or tray.

FUNERAL-CAR.—James Burns, Cincinnati, O.

The car provided for in this invention is adapted to carry funeral biers and other appurtenances used in funeral ceremonies. The invention may also be used in railway cars for transporting fire-engines and similar vehicles. The car is provided with rails upon which a removable floor portion is carried and movable in and out of the car. A removable sill is held on the car and a sliding panel is capable of moving on and off the same to permit the displacement of the floor portion. In operation the movable floor is lowered by means of the rails, and the bier placed upon the floor. By means of ropes attached to the floor the bier is raised into the car. The rails may then be folded out of the way under the car, and the sliding panels closed.

Designs.

MOULD FOR PAVING-BLOCKS.—John L. Adams, New York city.

In this design side walls and end walls are so grouped as to form a skeleton figure of the shape of a parallelogram. Partitions in the figure are diagonally arranged and appear integral with the surfaces that they connect.

LOCKET.—Tillie J. Zeltmacher, New York city.

This locket consists of a slide-body in which a depression is formed. A frame surrounds the depression and receives a panel transparent in appearance.

A flange of the body extends beyond the frame and a cap-member connected with the body within the periphery of the flange is given an interior configuration corresponding to the outer surface configuration of the panel and frame.

TEAPOT OR LIKE ARTICLE.—Austin F. Jackson, Taunton, Mass. The body of this teapot is oblong in horizontal section. The large lower portion is of convex outline and the smaller upper portion of concave outline. The base is of a shape corresponding generally to the body portion, spreads out beneath the lower portion of the body and has on each side a symmetrical ornament of a double scroll pattern. A similar ornament is arranged at the margin of the upper portion on each side. The spout is of reversely curved outline and has on its lower end or root portion a series of scallops joining onto the body portion. Scrolls are arranged at the top and bottom of the spout. The top is conical, with reversely curved sides concave at the bottom and convex at the top, with a series of upwardly converging corrugations. The handle is scalloped in cross-section and has a spreading root portion where it joins onto the upper portion of the body and a scalloped scroll on either side. The handle is otherwise ornamented with many beautiful decorations.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co. for 10 cents each. Please send the name of the patentee, title of invention, and date of this paper.

NEW BOOKS, ETC.

DIZIONARIO TECNICO IN QUATTRO LINGUE. III. Milan: U. Hoepli. 1898. Pp. 509.

This little technical dictionary is in English, Italian, German and French. It is a work which has long been needed. It is a most useful dictionary and should be on the desks of all those who read foreign technical books and periodicals.

SALVA-WEBSTER SPANISH-ENGLISH AND ENGLISH-SPANISH DICTIONARY. Chicago: Laird & Lee. Pp. 400. Price, limp cloth, 80 cents; stiff cloth, 60 cents.

This compact little work cannot fail to be a great convenience, at the present time, to all who desire to keep in touch with the news of the day, when so much of intense interest is happening in our relations with Spain and the Spaniards in Cuba. It also contains a geographical and biographical cyclopaedia of Spanish-speaking countries, with maps, etc.

A TEXT BOOK OF BOTANY. By Dr. E. Strasburger, Dr. Fritz Noll, Dr. H. Schenck, Dr. A. F. W. Schimper. Translated from the German by H. C. Porter. With 594 illustrations, in part colored. London and New York: Macmillan & Company. 1898. Pp. 632. Price \$4.50.

No words of commendation are needed for this translation of Strasburger's botany. The names of its authors and the distinguished position they occupy in the world of botanical science testify to the high character of the book. Embodying the well considered conclusions of a lifetime devoted to botanical work on the part of its chief editor, Dr. Strasburger, and the investigations of his able collaborators, it will be found to include all the latest results of botanical study and research. The great thoroughness which is admirably exemplified in the present book. It is very difficult to find satisfactory equivalents for German terms, and the translator appears to have accomplished this task with great felicity. The work is divided into two parts—I, general botany, including morphology and physiology, and part II, special botany. The book contains 594 illustrations, part of them being colored. It is beautifully printed on fine paper and is a splendid example of a modern science text book.

FOSSIL PLANTS FOR STUDENTS OF BOTANY AND GEOLOGY. By A. C. Seward. With illustrations. Vol. I. Cambridge: University Press. New York: Macmillan Company. 1898. Pp. xviii, 452. Price \$3.

The present work is the first volume of an important contribution to paleobotany. This subject does not readily lend itself to adequate treatment in a work intended for both geological and botanical students. The botanist and geologist are not always acquainted with each others' subjects in a sufficient degree to appreciate the significance of paleobotany in its several points of contact with geology and recent botany. The author has endeavored to bear in mind the possibility that the pages of his book will be read by both non-geological and non-botanical students. His plan has been to deal in some detail with certain selected types, and to refer briefly to such others as should be studied by any one desirous of pursuing the subject more thoroughly, than to cover a wide range or to attempt to make the list of types complete. A second volume is promised which will contain such interesting features as geological flora, plants as rock builders, fossil plants and evolution. The present volume is well illustrated and shows a wonderful amount of research.

AMERICAN RAILWAY BRIDGES AND BUILDINGS. Official Reports, Association Railway Superintendents Bridges and Buildings. Compiled and edited by Walter G. Berg. Chicago: The Roadmaster and Foreman. 1898. Pp. 706. Price \$2.50.

In this progressive age the best results are obtained by applying past experiences to the problems of today. The department of bridges and buildings of American railroads is a very important division of railway administration, and the only authentic published records of the various kinds of work coming under this head are the annual reports of the Association of Railway Superintendents of Bridges and Buildings. They were issued only in limited numbers and the form was not the most desirable. In order to extend the usefulness of these reports and to make them available for every one, the reports and information collected by the asso-

ciation during the last seven years have been compiled and edited by W. G. Berg, principal assistant engineer of the Lehigh Valley Railroad and president of the association, and are published in a form suitable for a handy reference book. It is profusely illustrated.

GOLD DUST. How to find it and how to mine it. By Philip Minor. Seattle, Washington. 1898. Pp. 39. Price 25 cents.

The little pamphlet is brimful of exactly the kind of information which those who are interested in mining or prospecting always want to know. It gives a great deal of important information in a handy and inexpensive form. The only part of the book which we are disposed to criticize is the medical advice, but it is not probable that the purchasers of the work will go to a book of this kind for medical advice.

THE MANUFACTURE OF GLUE AND GELATINE. The application and uses of machinery, etc. Complete list of manufacturers and dealers in the United States and Canada. New York: The National Provisioner Publishing Company. 1898. Pp. 223. Price \$10.

The manufacturers of glue have made special effort to keep their methods and processes as secret as possible; so that the literature upon the subject is very limited. Nearly every manufacturer has some little arrangement, machine or device which enables him to economize in some way or other, so that the National Provisioner has done wisely in collecting the writings of men who are entirely familiar with the various processes of making glue and gelatine. The result is a very helpful book, which may be regarded as one of the most important contributions ever made to the subject. The book is handsomely printed and bound and is well illustrated. It also includes a complete list of manufacturers and dealers in glue and gelatine in the United States and Canada.

WOOD WORKERS' TOOLS. Being a catalogue of tools, supplies, machinery and similar goods. Detroit, Mich.: Charles A. Strelinger & Company. Pp. 400. Price 25 cents.

That a catalogue of tools is not always dry and uninteresting is proved by the catalogue of the firm referred to above. It treats of tools, machinery and supplies. For many years catalogues have been growing larger and larger, until things were getting to such a pass that it almost became a grave question as to whether manufacturers would not have to put up special library buildings for trade catalogues. That a catalogue need not, however, be an enormous folio is evidenced by the catalogue which we are noticing. A small engraving tends, in a majority of cases, to be as useful for the purpose as a large one. An account of its small size this book can be kept on the desk and constantly referred to or it can be carried in the pocket. Besides being a catalogue of tools in the ordinary sense of the word, the catalogue contains a large amount of information on the use of tools which will prove available to every amateur and even to those who use tools as a means of livelihood. The catalogue is admirably got up and is in reality a valuable reference book. There are 2,253 illustrations, besides plates which illustrate the "Elements of Descriptive Geometry as Applied to the Trades."

PATENTED TELEPHONY. A Review of the Patents Pertaining to Telephones and Telephonic Apparatus. By the American Electrical Engineering Association. Chicago, Ill. 1897. Pp. 102. Price \$1.50.

A review of the principal patents pertaining to telephones and telephone apparatus, in a simple form, is a novel idea. This treatise is designed as a reference book for the inventor, engineer and patent lawyer. The United States patents now in force which cover devices and systems used in telephones, number thousands. The present work gives the salient features, the high lights in the art, as it were, which are revealed by the study of both expired and unexpired patents. It is well illustrated by the reproductions of patent drawings.

RESEARCHES UPON THE ANTIQUITY OF MAN. At an Indian Stone Blade Quarry in the Delaware Valley, at a Mortuary Deposit of Indian Skeletous in Maryland, in Certain Shell Heaps on the Coast of Maine and at the Durham Cave and Indian House Rockshelter in Pennsylvania. By Henry C. Mercer. Boston: Ginn & Company. 1897. Pp. 178.

A valuable archaeological study fully illustrated with maps, plans and well executed engravings.

"Monumental Records" is the name of a new journal devoted to archaeology. It is edited by Rev. H. Mason Baum, and the subscription price is \$1.50 per annum. It is published in New York City, P. O. Box 1839. It is a mistake to believe that archaeology is a dull and uninteresting science. The reverse is quite the case, and it is refreshing to see a journal devoted to archaeology which is adequately illustrated by modern processes. It is to be hoped that all those who are interested in this charming science will become subscribers to this journal, whose field is the world, and it appeals to the intelligent and cultivated public which is interested in discoveries that are being made in ancient centers of civilization. Too often discoveries are made known only by the reports of societies and expensive monographs. Up to this time there has been no periodical exclusively devoted to exploration from which the public could get a reliable and popular account.

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The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4. Munn & Co., publishers, 361 Broadway, N. Y.

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HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication. References to former articles or answers should give date of paper and page or number of question. Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn. Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same. Special Written Information on matters of personal rather than general interest cannot be expected without remuneration. Scientific American Supplements referred to may be had at the office. Price 10 cents each. Books referred to promptly supplied on receipt of price. Minerals sent for examination should be distinctly marked or labeled.

(7446) W. J. K. asks: 1. What is it in an electric current that produces the shock—the amperes or volts? A. There are two quite different modes in which electricity affects the body. These are by shock and by electrolysis. Your questions relate to the effect of shock. In this a very high voltage is essential. In either case, there must be voltage sufficient to overcome the resistance of the body, which may be from 300 to 10,000 ohms, according to the dryness of the skin. 2. I have read that if there be an exceedingly high potential, there will be no shock. Is this true? A. Certain experiments performed by Tesla are relied upon as proof of this statement. It should, however, be said that it is not universally believed that there is no shock with the highest voltages. 3. Why is it that a broken or alternate current will give more of a shock than a direct one of the same voltage and amperes? A. Because with an alternating current the shocks are given in opposite directions so rapidly and with such violence.

(7447) C. A. asks: 1. Will you kindly let me know how many cells are required for a current of 20 amperes at 10 volts? A. To obtain 20 amperes at 10 volts, with a primary battery, is not easy. If you use the plunge type, its E. M. F. is about 1.8 volts per cell. You will need 6 cells in a series for the voltage. The maximum current of this cell is 4 amperes. You should have 6 such series to be sure of 20 amperes, making 36 cells in your battery. 2. Is it advisable to use plunge batteries with large plates? A. For occasional use and for a short time the plunge battery is as good as any, except the storage. 3. How shall I wind my motor? A. You can find a small motor described in Parkhurst's "Motor Building for Amateurs." Price \$1 by mail. Or in Watson's "Quarter Horse Power Motor." Price 50 cents by mail.

(7448) O. H. D. says: Can you tell me how to make blank wax cylinders for use in connection with graphophone or phonograph? A. We do not know what the wax cylinders are composed of or how they are made. This is a trade secret.

(7449) J. E. R. asks: What is the cost of firing 6, 8, 10, 12 and 13-inch guns? A. The cost of firing large guns is said to be as follows: 6-inch, \$100; 8-inch, \$250; 10 inch, \$400; 12-inch, \$600; 13-inch, \$800.

(7450) R. I. B. asks: Does a 13-inch gun refer to the caliber of the projectile or to the distance which it will carry? A. As its name implies, a 13-inch gun is a gun with a caliber of 13 inches.

(7451) C. H. S. asks: 1. Is there any difference in the resistance of iron and steel wire? A. Steel wire has a higher resistance than iron wire of same size. If various grades of iron have resistances represented by the numbers 9 to 15, various grades of steel will have resistances represented by the numbers 15 to 43. [Kohlrausch.] 2. Is galvanized steel wire suitable for telegraph and telephone lines? If not, why? A. Yes. 3. How many carbon rods one-half inch diameter should be used in a bichromate battery in place of two strips 2x1/4x6 inches? A. The surface of the carbon rods must be equal to that of the plates. In this case five rods 6 inches long are required. 4. What is the output in amperes of a pint bichromate cell? A. The rate of output depends on the size of the plates. A pint cell will probably deliver 2 amperes. Its ampere hours depend on the amount of solution to be decomposed. This may be 20 to 30, or perhaps somewhat more.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

MAY 31, 1898,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing various inventions with their respective patent numbers, including items like Air compressing apparatus, Bicycle wheels, and various mechanical devices.

(Continued on page 332)