RECENTLY PATENTED INVENTIONS. Railway Appliances.

90

CAR COUPLING. - Moralis Hall, Greenfield. Tenn. A vieldingly mounted drawbar has a hook at each end, the hooks extending in opposite directions and the bar being reversible, while in one end of the drawbar is mounted a spring-actuated shaft to which is secured a U-shaped link, there being an auxiliary link on the opposite end of the drawbar, and a bar secured to the link being adapted for connection with a similar link on the drawbar at the opposite end of the car. The device is intended to facilitate the ready coupling and uncoupling of cars of different heights, as well as for use with cars having the ordinary link and pin coupling, and to do this the trainmen do not have to go between the cars.

CATTLE CAR. - Ferdinand E. Canda, New York City. This car is constructed with main overlapping ways or runs and auxiliary ways or runs, with flexible partitions movable in the ways, the main ways forming guides for the main portion of the partitions and the auxiliary ways forming guides to receive the lower ends of the partitions, whereby the car is divided into stalls or compartments when used to transport cattle. The gate is to be moved to a position just beneath the ceilings when the car is to be used for general freight purposes. This improvement is only one of a series of inventions in this line for which pa tents have been issued to this inventor.

Mechanical Appliances.

WIRE STAPLE MACHINE. - John Howenstine, Fort Wayne, Ind. In a suitable frame is a cutting and forming die block and a mating perforat ed die plate on which the die block slides, with a main lever and a movable anvil, while there is a staple moving pusher bar to set a formed staple, and a wire-feeding device. The machine is designed to rapidly form staples from a coil of wire and insert them into the material that is to receive them, the staples being set successively as they are formed, and caused to embrace a stay rod of wire to fasten it in place. The machine is especially adapted to insert staples in wooden packing boxes which are stayed by the use of strengthening rods of wire.

BED FOR PRINTING PLATES. - William MacKay, New York City. This invention provides an improved hed for conveniently supporting metallic plates during the process of printing, to securely hold the plate and permit of adjusting it to present an absolutely true surface and insure accurate printing. The bed is provided with a clamp consisting of a jaw baving a shoulder on its upper face, a rounded projection on its inner face, and slots in its lower end, while a second jaw is secured on the upper end of the first jaw and has its front edge beveled and provided with a recess in its under face engaging the shoulder of the other jaw.

LEATHER DRESSING MACHINE. Marius and Victor Martin, Paris, France. An upper and lower cylinder are mounted, one in fixed and the other in vertically movable bearings, a main lever have ing connection with the upper cylinder, while a screw secured to the main lever is mounted in the frame of the machine and another screw above the main lever limits its movement. The upper cylinder has a roughened face, and has projecting helicoidal plates hetween which are layers of brushes, the skins being fed flesh side up between the cylinders. The ma-chine is designed for the treatment of skins, wet ordry, and to perform the different processes of skiv ing, bleaching, scraping, smoothing, glazing, etc.

Agricultural.

POTATO DIGGER. -A. C. Prentice, Winston, N. C., and C. M. Fuller, South Byron, N. Y. Combined with the frame and driving mechanism is a transverse shovel and an endless belt having a series of rearward projecting fugers, the shovel discharging upon the fingers of the lower balf of the belt. The machine, after actual trial, is claimed to save one horse power and the wear of the parts is reduced to a minimum while the construction is simple and inexpensive. The potatoes are all carried to one side and left in a narrow row, where they may be quickly picked up. By mean of a reversible change of gear, every row can be dug instead of each alternate row, and the potatoes an vines all carried away from the standing vines.

CULTIVATOR. - John N. Stanley Ozark, Ark. This invention relates particularly to cotton cultivators, the object of the invention being to provide a machine with a number of interchangeable parts, to be used at different stages of the growth of the plant, also furnishing improved means of securing the scrapers to the standard. A threaded bolt connects the main and second beams, in combination with inwardly curved self-adjusting fenders, and the scraper and covers. The colters are used when the cotton in young, and to cut away weeds, etc., and may be used in place of coverers in connection with the scrapers This cultivator can also be used to cultivate corn,

is, by this invention, provided with a second open bore, in the rear of the first bore, for the reception and protection of a scale-marked strip, preferably made of enamel, to be secured in position by sealing it to the glass. The improvement is more especially designed for clinical or chemical thermometers, where the external markings of the scale are liable to be defaced or destroyed by the acids used in cleaning, etc.

ADDING MACHINE. - William F. Lawrenz, Duluth, Minn. This is an improvement for use on cash registers and indicators, and is mounted in a casing formed integrally with the register and indicutor, or separately, and attached to the frame of the register. It is adapted to register the exact total amount of money in the till or drawer, or when differently set to register the amount of money registered by the cash register each day, week, or month, giving thus the exact amount of sales for the period for which the machine is set. The machine is simple and durable in construction, and the levers which actuate the cash register and indicator simultaneously through suitable connections actuate the adding machine.

CASH CARRIER.-Samuel J. Besthoff, New York City. This is a self-propelling cash car of simple and durable construction, in which the propelling mechanism is wound upand put in operative position by manipulating the cash receptacle of the car or its cover. The car has a swinging door over its cash compartment and a spring-actuated mechanism combined with a pawl and ratchet winding mechanism, operated by the binged end of the door. If the mechanism should be overwound by the frequent opening and closing of the cover before the car is placed on the track, means are provided for relieving the superfluous tension and reducing the speed of the car as desired.

DUPLICATING MACHINE. - Robert Morgeneier and Jasmin P. Bergeron, Winona, Minn. This is a machinedesigned to facilitate the reproduction, in unlimited number and at small cost, of the most elaborate and delicate carvings and sculptures, as well as natural casts or patterns therefrom, the machine being so made that patterns or models of any proper material will not be damaged by it. A tripping mechanism is arranged in connection with a series of guide fingers of a reciprocating standard, drills or bits with means for revolving them being arranged in connection with the fingers, while there are holders for the pattern and for the material in which the reproduction is to be effected, and means for imparting a corre sponding movement to the pattern and the material the movements being practically universal.

PHOTOGRAPHIC NEGATIVE MARKER -Benjamin A. Blakemore, Staunton, Va. This is a device to enable photographers to number or otherwise distinctively mark their negatives as they take them thus avoiding uncertainty in afterward identifying the negative, which is frequently confusing when a considerable interval elapses between the time of sitting and the development of a plate. The invention con sists of a stencil plate bearing a number, name or other marking to be applied to the sensitized plate and photo graphed on the plate simultaneously with the exposure for the sitting.

INCUBATOR. - Frank Frey and Abraham M. Wayne, Quincy, Ill. This invention provides a novel construction designed to facilitate the auto matic regulation of the temperature of the incubator by means of a balance thermometer and other peculiar features, and whereby a constant and perfect circulation of water in the beating chamber is obtained. The body of the incubator is made impervious to moisture and cold, and the trays are so made that the heat will reach almost the whole surface of the eggs, the position of the latter being changed expeditiously and conveniently, without liability to breakage. The pans for the interior of the hatching chamber are designed to absorb any surplus of moisture, while also serving to direct the heat in currents to the trays.

AIR COOLING APPARATUS. - George W. Smith, Mount Vernon, N. Y. In a storage chamber is an ice hox having a central chamber and an outer surrounding wall spaced to form a passage, a pipe connecting the central chamber and the space, while a blower is provided to effect the circulation of air. The invention is designed to provide a cold air producing apparatus which will be economical in the consumption of refrigerating material, and reliable in operation wherehy the interior air of a sealed chamber used for cold storage may be maintained at a low temperature for the preservation of articles of food and drink.

ARTIFICIAL OYSTER BED.-Achille M. Willis, Rediviva, Va. The hed proper preferably con sists of an outer metal frame, across which extends a network of wires to support a spawn-supporting mat, which may be of pine brush, shavings, etc., to which the spawn will adhere, or loam or mud may be used instead for the hed if deemed desirable. Connected with the hed and leading upward therefrom to a float is suitable ain or other slack to allow for the tides and to prevent accident These beds are designed to be arranged in sets to cover the bottom, seed ovsters or other edible mollusks being placed on them before lowering, while the floats are numbered or otherwise designated to enable the owne to keep account of the condition of the several frame These beds may be used at depths too great for ordinary oyster dredging, a windlass being employed on th boat to lift them. BICYCLE. - Walter Stillman, Jr., Closter, N. J. This is an improvement in that class of safety bicycles which are driven by shaft and gear instead of a chain and sprocket gear. The driving mechanism is simple and durable, and may be readily applied to any form of hicycle, or tricycle, Provision is made for taking wear on the bevel gears, and a gnard effectually covers the mechanism. The frame of the machine has not so many sections as is now customary, because the adjustment of the driving mechanism is contained in itself and does not need the co-operation of the fame, which may be made more solid and durable.

moving ashes and cinders from stoves and grates, and is designed for use alternately to sift the unburned or partly burned coal from the ashes and for the removal of the latter. It is a simple and inexpensive utensil, having an elongated blade, with parallel side flanges and open ends, a sifter being formed in one end portion, while a prvoted spring-limbed handle is adapted to lock longitudinally of the blade and removably lock above either end.

BREAST COLLAR FASTENER. - James J. Turner, Casey, Ill. This fastener is adapted to work in front of the borse's neck or breast, and unite the two forward ends of a transversely divided breast collar. It is constructed of two independent sections having oblique-faced inner meeting ends and loop pieces on their outer ends, one inner end having hook-shaped recesses and the meeting end of the other section having curved hooks adapted to engage with the recesses in the adjacent section.

UMBRELLA OR PARASOL.-Charles H. Ely, Atlantic Highlands, James W. Danser, Freehold. and Frank B. Rue, Atlantic Highlands, N. J. This invention provides a novel form of construction for umbrellas, etc., using a paragon frame, to form a knockdown umbrella which may be conveniently carried in a valise or satchel. The outer sections of sec-tionally constructed ribs are fitted to slide on the inner sections, a runner carrying bracesbeing pivoted at their inner and outer ends, while longitudinally adjustable rods are applied to the braces, and cams controlled by the rods are adapted to lock or release the sliding sections of the ribs relative to the stationary or inner sections.

TROUSERS. - Isaac L. Morris. New York City. This garment has slits or openings at the side forming front and rear sections, the front section baving a fly and fastening straps and the back section being adjustably made to fit a narrow or wide back, and provided at its edges with straps and adjustable fastenings, whereby the trousers may be fitted to a person having a wide back and a small stomach or to one baving a narrow back and a large stomach

Nore.-Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

SCIENTIFIC AMERICAN BUILDING EDITION AUGUST NUMBER.-(No. 70.)

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- 2. Colored plate of the beautiful and substantial stone residence of S. Clark, Esq., on Riverside Park, New York. Mr. Henry Kilburn, architect. Two perspective elevations and floor plans.
- A cottage recently erected at Upsal Station, Pa., at 3. cost of \$6.500 complete. Floor plans and perspective elevation.
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- A round end house after the style of o'd English homes, erected at Wayne, Pa. Cost \$5,463 complete. Plans and perspective view.
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- 16. A very convenient and attractive cottage recently erected at New Dorp, Staten Island. Cost \$4,950 complete. Perspective and floor plans.
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Business and Personal.

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marked or labeled

(3211) E. B. asks: 1. What is the E. M. F. of one cell of Leclanche battery (porous cup Leclanche)? A. 1.47 volts. 2. How many amperes or what fractional part of an ampere will one cell produce? A. About 1/2 ampere. 3. What is the unternal resistance of one cell ? A. 5 ohms.

(3212) W. J. A. B. asks: 1. When, where, and by whom was the first dynamo made? A. In 1866, William Varley filed 10 the British Patent Office a provisional specification for a dynamo electric machine, but this was not published unti July, 1867. In February, 1867, Dr. C. W. Siemens read a paper before the Royal Society on the dynamo. Sir Charles Wheatstone read another paper on the same subject at the same meeting, so that it is difficult to state who was the first inventor of the dynamo. 2. When, where, and by whom was the first arc (electric) light made? A. Humphry Davy showed the arc tht for the time in 1810, at the Royal Institution. 3. When, where, and by whom was the first incandescent light made? A. The first incandescent lamp was patented by King, in England, in 1845, 4. Which is cheaper, and how much, horse power, cable, storage battery, or trolley power, for street cars? A. As the conditions vary so much in different places, it will be impossible to give a very satisfactory answer to this query. It is probable, however, that under favorable conditions the cable system is less expensive than either of the others. 5. What is the greatest speed over attained by an American locomotive with a train? And an English ditto? A. On American railways, 36 miles in 30 minutes, 107 miles in 97 minutes, are two of the best examples of fast running. The average rate of high speed has reached 69 miles an hour; 75 miles and over have been made under the best conditious. It is stated on good authority that there is very little difference in the speed of the fastest trains here and in Europe. 6. What is the greatest diameter of a driving wheel of a locomotive ever built ? A. On one of the early engines used on the Camden & Amboy Railroad the driving wheels were 8 feet in diameter. In Europe, large wheels are still in use to some extent, but here large wheels have been abandoned, and 6 feet is the largest, 7. How can

Miscellaneous.

SURVEYOR'S INSTRUMENT. - Solomon Davis, New York City. This is an improvement in instruments employed for measuring distances and magnitude or height of distant objects of triangulation which is effected without laying off a base line, and more easily and expeditiously than by the ordinary method. Two instruments are employed and a portable base line of known length, which connects them and forms the base of the triangle the length of one side of which is required. Both instruments are supported on tripode, and one, baving the features of the ordinary surveyor's level, is used to determine the angles of the triangle, while the other is a distance instrument, similar in many respects to an ordinary azimuth o compass.

THERMOMETER. - Joseph Kent. 98 Hation Garden, London, England, The glass thermometer stem, having a bore for the mercurial column. M. Barrett, Warrior Station, Ala. This abovel is for re-

SHOVEL - William Wright and John

-An improved hot air furnace, illustrated .-- Iron and steel roofing .- Improved woodworking machinery, illustrated .- Architect of the Woman's Building at the Columbian Exhibition, Chicago -The plain design is the hest.-Inside sliding blinds .- An improved tenoning machine, illustrated. - The Cudell trap. -- Lightning rods.-Properly anchoring heams in walls .- A proposed universal building law. - Windmills to supply water for houses, etc.-Graphite grease.

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any good dynamo for generating a direct current can infusion are quickly developed in an infusion of hay be used without change as a motor. 8. How long will and water. 100 gravity (telegraph) cells run a 16 candle power incandescent light (50 volts) ? A. It is impracticable to run a 16 candle power 50 volt lamp with 100 gravity sired shape, and again become hard as before. A. Stone cells, 9. How long will 200 cells do it? A. It is impracticable to run incandescent lamps with any number of gravity cells. 10. How many gravity cells would be necessary to charge a storage cell of dimensions $12\times$ 12×12, and how long to do it? A. For charging a storage battery cell, four cells of gravity battery are required. It takes from 7 to 8 hours to charge a storage battery.

recipe for fastening paper to the face of an iron pulley and how to make a good belt glue. A. Scratch the face of the pulley with a rough file thoroughly, so that there are no bright or smooth places. Then swab the surface with a solution of nitric acid 1 part, water 4 parts, for 15 minutes, then wash with boiling hot water. Have prepared a pot of the best tough glue that you can get: stir into the glue a half ounce of a strong solution tannic acid, oak bark, or gall nuts, as convenient to obtain, to a quart of thick glue; stir quickly while hot and apply to the paper or pulley as convenient, and draw the paper as tightly as possible to the pulley, overlapping as many folds as may be required. By a little management and moistening of the paper it will bind very hard on the pulley when dry, and will not come off or get loose until it is worn out. Use strong hardware wrapping paper.

(3214) W. R. asks: 1. How many sulphate of copper batteries would be needed to charge a storage battery for running an 8 candle power electric lamp? A. You will require 4 cells of gravity battery to each cell of storage battery, 2. Should the storage cells be arranged in multiple arc during charging process ? A. It is probably best to make the storage and gravity cells up separately, as above suggested. 3. How long will they run above lamp before running out, if used 6 hours daily? A. Storage batteries will not run large lamps for much more than six hours daily. 4. In what time can they be charged after the first thorough charge? A. It requi es from seven to eight hours to charge a storage battery. 5. What is the best arrange ment for the sulphate of copper cells ? Is the Edison Lalande battery a suitable cell for running an electric lamp? How many of these cells would it take to run an 8 candle power Edison lamp? Where can I find a full and extensive treatise on this last type of electric bat-tery? A. Write the Edison Manufacturing Company, Orange, N. J., with reference to the Edison-Lalande battery

(3215) E. L. asks if there is a school, preferably in the eastern part of the country, where a young man can take a short special course in electrical engineering without being required to pass the examination in the languages and higher mathematics which the regular colleges require? A. A special course in electrical engineering such as you specify would be best obtained in an electric manufactory or works of some kind. A college could not give a good course to with a wire armature core does not infringe any patthe exclusion of mathematics. You might address ent. Columbia College, of this city, Cornell University, Ithaca, N. Y., and the Stevens Institute of Technology, 'are used in the induction coil of the Blake transmitter ' Hoboken, N. J., for information as to any special or elective courses they may have in electricity.

(3216) C. W. writes: 1. Have you a paper or book on watch finishing ? A. We can supply you with the following books on the subject you mention. The "Watch Maker's Hand Book," by Saunier, price \$3.50. "A Treatise on Watch Work," by Nel thropp, \$2 50. "The Watch and How to Repair It," \$1. See page 53 of catalogue, which we send by mail. 2. Would it hurt a person to take brucine internally? A. It is a deadly poison, one of the worst known to 3. Is there any difference between brucine and brucin? A. No; it is only a question of spelling.

(3217) E. B. asks for a cement or composition. Kindly favor with a cement and how to apply it to join a close-grained, hard, white marble slab, 8 inches deep by 2 inches thick, 4 feet long, rough-broken into two pieces about the middle of its length, forming a side piece for cradle of a grave, and being always exposed to the inclemency of the weather. A. You might try a cement formed of oxide of zinc mixed with a strong solution of chloride of zinc. It will have to be applied quickly to each half of the stone, and the pieces joined before the cement sets. It will probably be well to experiment on a small piece of stone before applying the cement to the marble.

(3218) J. S. M. asks, What size of wire is suitable for winding field and armature of dynamo deocribed in SUPPLEMENT, No. 161, made size of cuts? A. It depends entirely upon what you intend to do with the machine. For general purposes, however, we think No. 20 on the armature and No. 18 on the field magnet would do for a series machine. 2. What can be put in whitewash for outdoor to increase its adhesive qualities ? A. Try skimmed milk. 3. Has there been a genuine history of Stanley's travels in Africa published, and by whom? A. Scribner & Co. of this city publish Stanley's books. (3219) N. J. asks: 1. Could you give me the recipe for a glue that will withstand water as wellas oil and alcohol? A. Marine glue is made by softening pure India rubber (unvulcanized) in benzole or naphtha. To one part of rubber originally used add ten to twenty parts of pulverized sheliac, mixing it with the benzole. and warm upon a water bath (or use a glue pot for this); apply by melting with a warm iron or wire on the surfaces to be united. Do not use a flame. Common glue may be melted with water and one-tenth its weight of bichromate of potash. Exposure to light makes it Insonuble. 2. Could you tell me whether such a glue is in the market ? A. Marine glue is sold by dealers in microscopic supplies.
 (3220) F. C. writes : There is a preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on both continents, and the preparation of the data was and practice on the set was an all and on application, and persons contemplating the securing of patents, either at home or about it I will be exceedingly grateful.

a dynamo be changed into a motor? A. As a rule, A. Try old flour paste allowed to stand for several days.

(3221) T. W. J. asks (1) for directions for softening stone, so that it can be moulded into any decannot be softened as you describe. 2. What liquids (or chemicals) will produce the most intense heat? A Sulphuric acid and water produce heat far above the boiling point. The acid should be added slowly to the water. There is always danger in doing it.

(3222) J. H. R. asks: How can I detect adulteration in bone meal, or whether it is pureor adulterated ? A. The only reliable way is by analysis. It (3213) C. E. N. and H. W. McC. ask a should dissolve without effervescence in nitric acid, but this is a very imperfect test.

> (3223) T. L. P. writes : In my daughter's house, being built from plans, furnished by your architectural bureau, the floors, which are of white oak, have become disfigured by black stains, probably where damp iron in some way has been in contact with them. I suppose it is tannate of iron. Can you suggest some means of removing this discoloration ? A. Try hydrochloric acid diluted with ten volumes of water. If this is not strong enough, try weak solution of oxalic acid. The idea is to use any remedy as weak as possible.

> (3224) O. C. K. asks: What advantages and disadvantages are connected with the use of balanced valves on steam engines as compared with the ordinary slide valve actuated by an eccentric attached to crank shaft ? A. The advantages are comparative freedom from wear and ease of movement. There being but little friction on the steam chest face, the perfect fit of both faces is maintained, saving leakage, which is a source of economy in running and repair. The gain in power is very small. The disadvantages are only found in their complicated construction and liability to become deranged by inattention to adjustment, the balancing requiring steam tight yet free moving joints. Both kinds being moved by eccentric and rod, there is no difference outside of the steam

(3225) M. E.-New York, Brooklyn, and Berlin are we believe the only cities that have general systems of elevated street railways. In other cities there are spurs of elevated tracks, or viaducts, on which trains pass to depots, etc.

(3226) D. W. S. asks : 1. Will you please tell me how the lights should be connected in circuit of eight light dynamo (Supplement, No. 600) so I can use one or more at a time? A. The lamps should be connected up in multiple arc; the field magnet of the dynamo should have about four more layers of wire, and the machine should be connected up as a shunt dynamo. 2. If I should build a machine after the same pattern for 16 lights, and connect lights in multiple. could I burn one singly, the machine running normally? A. Yes; if connected as a shunt machine, with the field magnet winding properly proportioned. 3. Also, can I sell this machine when finished, without infringement of any patent rights ? A. This machine when built

(3227) A. F. F. asks: 1. What sized wires What is the length and width of the core, and of what is it made? Are both coils copper? Is the primary coil insulated ? Is there anything placed between the two coils ? A. Use No. 36 wire for the secondary and No. 20 for the primary. Use two layers in the primary and 10 or 12 in the secondary. Make the core of the coil of a bundle of fine annealed wire $\frac{1}{16}$ of an inch in diameter and 3 inches long. The primary and secondary wires are insulated, and the two coils are separated by three or four thicknesses of writing paper wound around the primary. 2. What is an auxiliary magneto bell ? Will it work on a line 11/2 miles long without using the regular magneto? A. An auxiliary magneto bell is an additional bell put into a telephone circuit. It requires a magneto to operate it.

(3228) F. W. S. writes : A recent fire destroyed our entire stock; our safe preserved our books very nicely. Being enabled to unlock it readily by the combination, we now wish to know from a source of good authority if this safe would still preserve our books through a like fire, and if not, why? A. The preservative qualities of a safe depend chiefly upon the amount of water contained in the filling. Hence for this purpose plaster of Paris, alum, and other salts that hold a high percentage of water are used. If a safe is exposed to a high heat for a considerable time, aportion of the water will be driven out of the filling, and consequently the safe will be impaired.

NEW BOOKS AND PUBLICATIONS.

MASSAGE, THEORETICAL AND PRACTI-CAL. By Douglas Graham, M.D. Pp. 342. New York : J. H. Vail & Co. 1890.

This is the second edition of a book first published in 1884. It has been revised and enlarged, and the present volume is designed to cover a full description of the best mode of applying massage and its physiological effects as a remedial agent for a far greater num-Dr Dr ber of ailments than it has commonly been supposed to be available for. The effects of massage upon the internal organs, upon complaints peculiar to women. and upon affections of the nervous system, are treated with especial particularity, while rheumatism and joint af-fections and many other complaints are shown to be Rub the mixture well in a mortar, transfer to a cup, beneficially subjected to this treatment, the general comfort and satisfaction derived therefrom making this method of cure, wherever it can be employed, a really enjoyable one.

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