Tex. The object here is to provide a joint arranged to securely unite the meeting ends of adjacent rails with each other to allow expansion and contraction of the rails without their sliding on the joint, thus preventing wear, to insure lateral alinement of the rails, to effectively resist the flange thrust on curves, and to allow the convenient use of the device on steam and electric railways.

Pertaining to Recreation.

SKATE.—T. Spacie, Houston, Texas. Mr. Spacie preferably provides the skate with a foot-plate, but embodies in connection therewith substantially similar devices for attaching the skate to the sole and heel of a shoe, as described in former Letters Patent granted to him. Special means are used for securing to the under side of the foot-plate the forward set of rollers for the skate, and other special means are employed for also attaching to the under side of the foot-plate the rearward sets of rollers employed for the skate.

PUNCHING-BAG. — C. McKenzie, Butte, Mont. The invention is an improvement in bags, such as are used for practice in boxing and exercising. The apparatus embodying the invention includes two bags which are so suspended and adapted to revolve and swing laterally in vertical planes as to afford special advantages for instruction in boxing and exercise in general.

CONFETTI - CANNON. — R. Kliemandt, Mount Vernon, N. Y. The device is for use upon social occasions and for amusement for the purpose of scattering the substance known as "confetti" over floors and tables and over the persons of participants in various social functions. The invention relates more particularly to a miniature cannon or mortar for causing the confetti or analogous substance to be scattered by means of an explosion.

CARRIER FOR GAME.—J. M. Paul, El Paso, Texas. One purpose of the inventor is to provide a device for carrying game adapted to be worn across the shoulders and held in place by the weight of the load. Another, is to so construct the device that moderately large or small game of all kinds in large or small quantities may be expeditiously, conveniently, and securely placed in position in the carrier and carried with comfort without injury to the game.

Designs.

DESIGN FOR A BOTTLE. — G. Buton, Bologna, Italy. In this original and ornamental bottle the inventor produces a design the length of which is about evenly divided between the neck and body portion. The latter is plain in outline, but the neck at its center is gracefully and slightly increased in diameter.

Note.—Copies of any of these patents will be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of this paper.

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READ THIS COLUMN CAREFULLY.—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring the information. **In every case it is necessary to give the number of the inquiry.**

MUNN & CO.

For logging engines. J. S. Mundy, Newark, N. J.

Inquiry No. 8286.—For manufacturers of small machinery of brass or iron, such as can be used in model construction work.

"U. S." Metal Polish. Indianapolis. Samples free.

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Sawmill machinery and outfits manufactured by the Lane Mfg. Co., Box 13, Montpelier, Vt.

Inquiry No. 8288.—For manufacturers of machinery for making silk underwear, stockings and gloves.

I sell patents. To buy, or having one to sell, write Chas. A. Scott, 719 Mutual Life Building, Buffalo, N. Y.

Inquiry No. 8289.—For manufacturers of burlap bag turning machine.

Metal Novelty Works Co., manufacturers of all kinds of light Metal Goods, Dies and Metal Stampings our Specialty. 43-47 S. Canal Street, Chicago.

Inquiry No. 8290.—Wanted, the address of a party to make closures to fit in a corset.

The celebrated "Hornsby-Akroyd" safety oil engine. Koerting gas engine and producer. Ice machines. Built by De La Vergne Mch. Co., Ft. E. 138th St., N. Y. C.

Inquiry No. 8291.—For manufacturers of high-grade stilletes.

Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machinery tools, and wood fiber products. Quadriga Manufacturing Company, 18 South Canal St., Chicago.

Inquiry No. 8292.—For manufacturers of sheet gutta-percha ⅛ inch thick, and sheet ebonite No. 14 gauge, also Stubs' steel wire.

Automobile experts are in constant demand at high salaries. Our seven weeks' course is the most thorough and practical, fitting men to drive, handle and repair. Day and evening classes. Special course for owners New York School of Automobile Engineers, 146 West 56th Street, New York.

Inquiry No. 8293.—For manufacturers of machinery for cutting and polishing the bevel on plate glass.

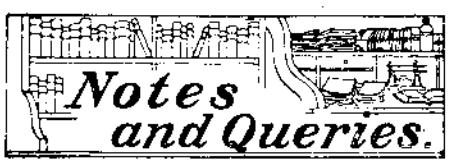
Inquiry No. 8294.—For manufacturers of match-making machinery.

Inquiry No. 8295.—For manufacturers of machinery for sawing logs up into shingle lengths by having it stationed on the log and operated by a small gasoline motor.

Inquiry No. 8296.—Wanted, a decorticating machine for South American fibers.

Inquiry No. 8297.—Wanted, a malleable cast factory to manufacture a horse release evener.

Inquiry No. 8298.—For manufacturers of wood-turning machinery, such as machines for making bungs for beer barrels, also wooden corks, also spigots.



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.

(10085) C. S. J. asks: I wish to learn the cause of trichinæ in pork. A. The trichina spiralis is a worm, a parasite of the hog. It is often found in great numbers in the flesh of these animals, in the encysted condition but still alive. If such meat is eaten without cooking thoroughly, the parasite is taken into the body and is rapidly propagated. The worm came originally from the rat. As hogs eat rats, they pass into the hog and thence into man. The only preventive is thorough cooking. This kills the trichinæ. No rare or underdone pork should ever be eaten. The risk is too great. The cost of immunity is so little, that anyone may be safe. Cook all pork thoroughly. 2. The cause of ptomaine poisoning by eating pork. What causes the presence of the poison, how the poison can be prevented, and whether or not there is any way of detecting the presence of poison before using the meat? A. Ptomaines are formed by decomposition. If only fresh food is used, one will be safe from these poisons.

(10086) H. S. N. asks: I have been a reader of your paper for several years, and always enjoy reading it. I should like to submit a problem for solution. The problem is this: Several years ago I took a picture of a fast train while running, a Michigan Central flier, at a point about two miles east of Decatur. On development the plate showed a blur of 1-32 inch, i.e., the pilot did. I used a Vive extra rapid plate; the focus of the lens was 6 inches; the distance of the engine, the pilot, from the camera, 50 feet; the length of exposure, 1-100 of one second; camera was placed at an angle of 15 deg. with the track. What was the speed of the train? The camera was a Vive, 4¼x4¼, meniscus lens. A. The solution of your problem of the speed of the train is not difficult, at least so far as a sufficiently close approximation is concerned. Start with the fact that the image of the pilot moved 1-32 inch during exposure. Since the lens is 6-inch focus and the pilot is 50 feet away, the pilot moved across the line drawn through the center of the lens, 100 times 1-32 inch, or 3.125 inches, since 50 feet is 100 times 6 inches. And since the camera made an angle of 15 deg. with the track, we must divide the 3.125 inches by the sine of 15 deg. to find the distance the pilot moved during the exposure. This gives 12.07 inches as the distance the train moved in the time of exposure, or 1-100 second. In one second it moved 1,207 inches, or 100 feet 7 inches. This is a speed of somewhat over 71 miles per hour. As we said above, this is an approximate solution, but still not far from the result which an exact solution would give.

(10087) J. S. M. asks: Will you kindly answer in your column of Notes and Queries the inclosed questions relative to Roman computation? I suppose the matter is simple enough, but I have never come across any work explaining it, nor any person whom I have asked who could throw any light on the subject. A. Very little is known concerning the method by which the Romans used their very inconvenient notation for performing the ordinary calculations. They are supposed to have used the abacus for all except the most simple problems. This instrument is in common use now by all Chinamen, and it is not difficult for any one to see it used wherever these men may be found. A description of the abacus may be had from any encyclopedia. There was a rod for each denomination of numbers to millions, seven rods each carrying five balls. Another set of short rods corresponded to these, and had one ball sliding on each. They could thus count by fives and carry by tens. Other rods supplied their need for calculating ounces. Further than this their business did not require them to go; they never needed to divide the distance of the sun by the velocity of light. They died in total darkness in regard to both of these data of the universe. As we said at the outset, we do not know the detail of the method by which the Romans made their calculations. Their mode of writing numbers was not like ours by placing like denominations in the same column, but each letter had its significance, and each number could be added by itself on the abacus, since each rod meant a denomination.

(10088) A. N. says: 1. I have seen it stated frequently that a single "ground" on a metallic circuit, while a source of danger, does not impair the transmission. If the potential at a "ground" is 5,000 volts, for instance, does this not mean 5,000 volts above the zero potential of the earth? If so, why does not all the current, if the resistance at the "ground" is low, flow to earth and equalize? A. A single ground on a metallic circuit does not impair the transmission as you state. The amount of electrification that passes to the earth is so small, and the capacity of the earth is so great, that it would take practically an infinite period of time to change its potential. 2. Standing on the ground, can a person touch with impunity one wire of a high-potential circuit if the circuit is free from "grounds"? A. If there was no ground, and no chance for the current to jump and produce another ground, there would be no injury to you in touching a high-potential circuit, but such a condition practically never exists on outside circuits. 3. About what is the resistance in ohms of the human body? A. This varies with the person, the points where contacts are made, and the condition of the flesh where these are made, but it is approximately 2,000 ohms. 4. What is the minimum strength of current the human body can endure? A. You probably mean the maximum. This also varies with the person, and the condition of the body, from 0.5 to 1 ampere.

(10089) F. J. M. says: Will you please answer the following questions through Queries column of your paper: 1. What is a Faradic brush? Please give a short description of it. A. We believe you refer to the brush made of wire bristles, which are connected to one terminal of the coil, while the other terminal is connected to a plate on which the hand rests, thus sending the current from the coil to the brush, the head, and back to the coil through the hand. 2. Does it make any difference what kind of cells are used in connection with a physician's coil? A. Any kind of battery can be used. A good form of dry battery is the most convenient. Always give full name and address, as we might wish to answer your query by mail.

(10090) F. G. says: Please print formula for making a vibrator jump-spark coil for a 3-horse-power engine. A. Scientific American Supplement, No. 1402, price ten cents, gives full directions for winding induction coils of various sizes. One giving a spark 1 inch long would be large enough for your purpose.

(10091) J. B. A. says: Is there any cheap way one can fix a camera so as to make a picture direct on bromide paper, so that you will not have to make a negative, then a print? I thought that there might be an arrangement attached to the lens, so as to change the image on the ground glass, so that when you develop the negative it will appear like a positive. If an arrangement of this kind can be made, will it decrease the light coming through the lens, and how much? A. There is no arrangement by which you can obtain a positive by exposing the bromide to the object through a lens. The negative differs from the positive in other respects than in the inversion of the image. The tintype process appears to do this, but if you look at it carefully you will find that the positive is a perverted image of the object. We fail to see any advantage in such an arrangement, as duplicate copies could not be obtained. If you increase the number of lenses through which the light passes, the image will not be as bright.

(10092) W. D. W. says: Will you be kind enough to answer the following questions for one who is anxious to know and who has the greatest respect for your opinion on scientific matters? 1. Will electric wires, furnishing current for arc lights coming in contact with street trees, injure them, that is, when the insulating covering has worn off from rubbing against the branches of the tree? One of the tree and park commission of this city (Columbia, S. C.), a college professor and a very intelligent gentleman, insists that the electricity, that is, all that is taken by the tree in wet weather, will do no harm, while I hold to the opinion that it will ultimately kill it, and I wish to know which one of us is wrong. A. We have found by experience that leakage from electric arc light wires does injure the limbs of trees, particularly when the difference of potential is very great, although we do not believe it would kill the tree unless it was very young. 2. When a tree has been killed by escaping electricity, how long a time should elapse, in case the leak be located and stopped, before it will be safe to put another tree in its place? A. We see no reason why another tree cannot be put in at once if the ground has been removed. 3. Some very large oaks that are exposed to the smoke from the railroad workshops have died very recently, and I am anxious to know if the smoke is responsible for their dying. The shops have been there for a long time, and it seems that if the smoke is the sole cause the trees ought to have died long before this time. It may be possible, however, that loss of vitality on account of age may be partly responsible for their dying. A. If the trees are very close to the top of the smoke-stacks, we have no doubt that the trees have lost some vitality on account of it, as the products of combustion are very destructive to vegetable life, but the trees would have to be under the direct influence of the smoke.

NEW BOOKS, ETC.

Lloyd's Register of American Yachts. 1906. By the Committee of Lloyd's Register. New York: Lloyd's Register of Shipping, 15 Whitehall Street. 384 pages. 35 colored illustrations of flags of the United States and Canada. Price, $7.50.

It was as long ago as 1874 that a small but complete volume containing the register of yachts was issued in New York. Since that time, publications of a like character have been local, rather than national, in scope, confining themselves to the larger yachts and clubs of the Atlantic seaboard only. In 1877 the Committee of Lloyd's Register of British and Foreign Shipping was requested by British yachtsmen to classify yachts after the same plan as merchant vessels. The work thus begun continued to the present time. In 1902, in response to a demand from American yachtsmen, the committee issued a similar Register of American Yachts, which has been continued annually to the present date. In the present volume for 1906, an entirely new plan has been adopted in the arrangement of the work. The introduction of other types of motor than the steam engine has removed the necessity for dividing yachts into two divisions, steam and sail. Consequently, all yachts in the present volume are grouped in one alphabetical list. The almost universal use of the internal-combustion engine has called for a more complete description of this type, and the diversity in hulls has called for new particulars descriptive of the details of houses and cabins. In quality of paper, type, and illustrations, this excellent work is fully up to those which have annually preceded it. The first 260 pages consist of the register, which gives the full particulars concerning the construction, rig, leading dimensions, designer, builder, and place and date of launch, the machinery, the owner's name, and the home board of registry. Particularly handsome are the thirty-four colored plates, giving the flags of yacht clubs and the flags of private owners, following which are the particulars of the American and Canadian yacht clubs, lists of yacht designers, engineers, builders, etc., also an alphabetical list of yacht owners.

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