

INDUSTRY AND MECHANICS



NEW OIL GUN QUITE UNIQUE

Disk That Screws Through Center Forces Out the Liquid—Flow is Easy and Uniform.

A new kind of oil gun that is operated by a screw instead of by squeezing the reservoir has been designed by a Wisconsin man. Running through the center of the reservoir, which is in the handle of the gun, is a thread on which a screw disk is mounted. A little wheel at the back end of the handle operates this disk so that when the wheel is turned the disk is forced along the thread to the front of the implement, thus forcing out any oil or grease ahead of it through the nozzle.



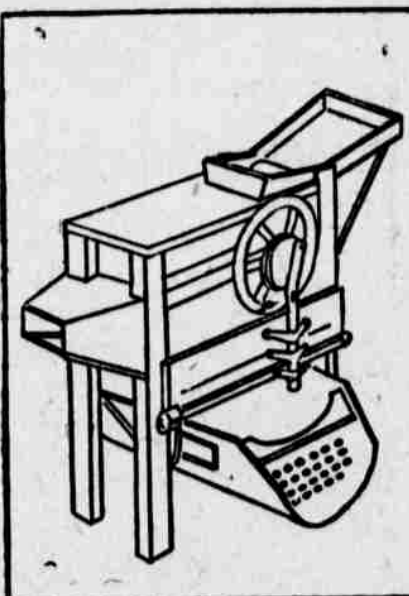
New Kind of Oil Gun.

The advantage claimed for this kind of an oil gun is that it not only utilizes every drop of oil but getting it all out of the cylinder but the flow is so easy and uniform that all the lubricant gets in the places where it is needed. In using the old style oil can there was often a great deal wasted, as it sputtered all over when the can was pressed and only part of it reached the points it was meant for.

NEW WAY TO CLEAN COFFEE

Colorado Man Invents Rather Complicated Apparatus for Separating Beans into Sizes.

A rather complicated but ingenious apparatus for cleaning coffee, which separates in its separation into three sizes of beans, has been patented by a Colorado man. A receiving drum passes down through a suction pipe and discharges over a cone-shaped separator. As the coffee falls, an upward draft is created by suction, which carries the fine particles through the pipe and down into a chamber on the other side, where all that is hopeless waste is expelled through a series of slots and such fine particles as can be used



A Coffee Cleaner.

for ground coffee fall into a waiting receptacle. The larger beans drop straight from the conical separator upon an inclined screen, with apertures large enough to admit undersized beans, which fall into a pan below. The largest beans, which might be classified as prime, roll down the screen into a cup at the bottom.

Use for Old Paving Blocks.

A great deal of wood block is made use of in the paving of the streets of London, and the machine has been recently built by which these blocks are renovated after having been taken up from the street after a period of usefulness. Heretofore these blocks have been discarded after removal, but now they are separated and placed in the machine, where an adjustment saw removes just as much of the block as is necessary to give it a smooth and even surface for relaying. Of course, the blocks are somewhat thinner and lighter, but they are available for many years of wear if placed where the traffic is not so heavy.

Rubber Found in Rhodesia.

The world is searching everywhere for rubber. Now comes word that the unexplored region of northern Rhodesia has rubber areas to an unlimited extent.

Gray Tint for Brass.

Take 20 parts of tartar emetic and add just enough hydrochloric acid to dissolve; then dilute with half the total volume of water. Apply to the brass.

REVIVAL OF OLD INDUSTRIES

Canada Furnishes Beautiful Home-spuns in Wool and Linen for Children's Frocks and Gowns.

From the home industries of Canada come beautiful homespuns in wool and linen, woven and dyed by hand, which are charming in color and texture, says the Handicraft. These are being used by two of our United States industries in making children's frocks and dressing gowns.

The Old Glory Union at Bourne, Mass., and the Aquidneck Cottage Industries of Newport, R. I., find difficulty in filling the demand for these handmade garments, which are distinctive in design and showing an application of needlecraft out of the position is usually occupies.

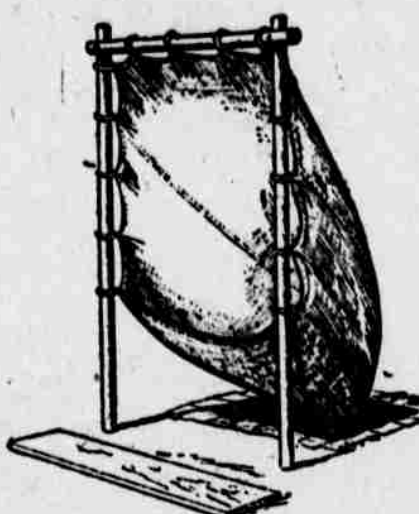
The Basket Shop in Belfonette, Pa., produces baskets made by the townspeople under the direction and from the designs of able craftsmen who have been in their town, aided by an expert in getting the best results in dyeing. The settlements in many of the large cities are getting good results in needlecraft and in making pottery. The Bohemian Needlework Guild in New York and the Paul Revere Pottery in Boston are notable examples.

The Keene Valley tapestries made in the Adirondacks by the guides' wives in their homes from special designs by Pamela Coleman Smith and under the able direction of Mrs. George Notman are remarkable examples of weaving and are good from every standpoint. Made to order from special designs and with the colors dyed to harmonize with any surroundings they fill a need long felt by interior decorators.

FRESH AIR TO WELL DIGGERS

Danger of Firedamp Eliminated by Use of Collecting Sheet, as Shown in Illustration.

In localities where firedamp exists underground, it is a difficult and dangerous undertaking to dig a well as the digger often loses his life by entering the deadly gas, which, being heavier than air, is found at the bottom of



Fresh Air in Well.

the well. If firedamp is suspected, a lighted candle may be lowered to the bottom of the well and if the gas is present the candle will be extinguished.

A method of furnishing fresh air to the person who is working down in the well is shown in the accompanying sketch. An air collecting sheet, a piece of ordinary sheeting about 2 yards wide and 3 yards long, is fastened to the posts, says a writer in the Popular Mechanics. A pipe, 6 or 7 inches in diameter, is made of the same cloth with an enlarged funnel-shaped end which is sewed to the bottom end of the air-collecting sheet. Hoops are placed in the cloth pipe at suitable distances to keep the pipe open for the free passage of air. The edges of the air sheet should be reinforced so it will stand the pressure of the wind. The end of the cloth pipe should hang near the digger's head.

INDUSTRIAL MECHANICAL NOTES

Arkansas has the only diamond mine in the world, outside of Africa, in Pike county.

The American shoe manufacturer is extending his sales in all parts of the world.

Powdered milk will form part of the food supply of an Australian antarctic expedition.

A wood substitute made of dried grass is being experimented with abroad for match making.

Pulverized street rubbish and coal tar have been found to make good fuel briquettes in Amsterdam.

Interesting tests in Germany have shown that pens made of tantalum outwear those made of steel or gold.

Flour, when compressed, will keep for an almost indefinite time. Its bulk is decreased by the process one-third.

American sandpaper is popular in Germany, despite the fact that its cost is higher than that of the domestic product.

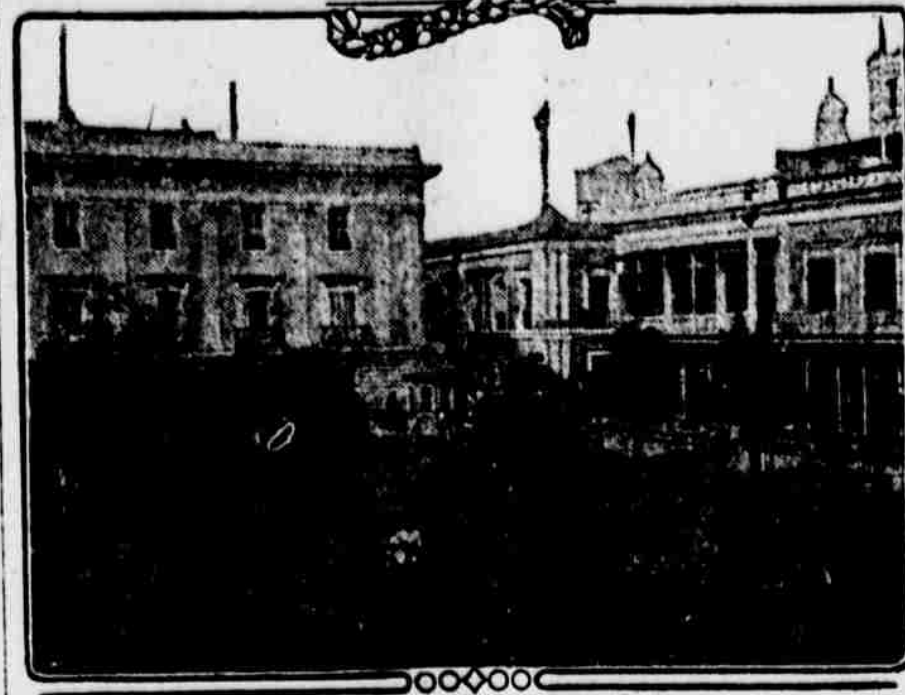
The effect of seasoning wood is to bring into the same space 10 per cent. more of the fibers than when the wood was green.

Pearls are now in great demand and increasing in value. A necklace costing \$28,000 not long ago was recently sold for \$90,000.

For his assistance in putting the jute industry of Bengal, India, on a profitable basis, an American is to receive a fee of \$25,000.

The manufacture of specially light and resilient tires for aeroplanes wheels has become an important feature of the tire making industry.

IN CHARMING PORTO RICO



PLAZA, SAN JUAN

ON the island of Porto Rico "winter is always summer," and the summer months—as far as temperature is concerned—do not vary much from those of winter. It is certainly an ideal resort for those who wish to escape the cold.

The climate, however, is not the only attraction. The customs, costumes and habits of the Spanish people have not been entirely obliterated after 12 years of American control, and the observant visitor finds much to amuse and instruct during a brief stay. While there are many Americans here, some in official positions, others engaged in commercial pursuits, the Spanish language is largely used, and especially so in all business transactions. A nation may be conquered and annexed, the people may be reconciled to the change in government, but they will cling to their native tongue until it is gradually obliterated by generations of time and the influence of schools on the children, writes D. W. Grubb, in the Indianapolis News.

The civil government of Porto Rico consists of a governor, an executive council (the upper house), and the house of delegates (the lower house). The upper house has a membership of 11, all appointed by the president, and six of these must be native born Americans, and five citizens and residents of the island. The lower house has a membership of 35, all chosen by popular vote in the various districts. Some idea may be had of the preponderance of the native voter and of his loyalty to those of his own race, when it is known that only one native born American holds membership in the lower house—which is elective—while in the upper house—appointed by the president—six Americans and five Porto Ricans make up the entire membership.

Certainly the natives have no reason for complaint as to their influence in the legislative department. In the legislature and in the courts the Spanish language is used, and all the public records are made up in that language. If no greater progress is made here than was the case in the state of New Mexico, this island will be Spanish—as far as language is concerned—for sixty or more years to come. Education, however, is doing more for the people of Porto Rico than it did for those in New Mexico. The system of public schools here is fairly good and is being improved and extended from year to year. There are good school buildings in nearly all the school districts, and many of them are of a class that would be a credit to some of the large cities of the north.

Illiteracy on Decrease. At the time of the American occupancy of this island the illiteracy of the population was 84 per cent. Today—among the adults—the percentage of illiteracy is still great, but of those under fifteen years, there are few who cannot read and write. Of course, in some of the remote and sparsely settled districts schools are scarce, and possibly not up to date, but, on the whole, progress has been made and is still being made and results have been satisfactory.

Official records of 1899 give the number of children enrolled in schools at that time as 25,798. There was only one schoolhouse in the island built for school purposes. Scarcely half a dozen schools were taught in public buildings, and the remainder were, as a rule, conducted in rented houses, many of them unsanitary, inadequate in size, having no proper equipment, and often providing but scant protection from the inclemencies of the weather.

The number of pupils has more than quadrupled. During the ten years, beginning with the fiscal year 1901, there has been expended in the educational activities of Porto Rico \$9,389,121.97, divided as follows: Buildings, \$903,628.19; books, equipment, administration, etc., \$3,680,288.92, and instruction, including salaries and scholarships, \$4,805,303.96. The continuation of progress is shown by an increase from 105,125 pupils enrolled during the fiscal year 1909, to an enrollment of 131,453 during the last year in all public schools, being an increase of approximately 17 per cent. for the year.

There are now 621 buildings used for rural schools, and 204 for schools in cities and towns, a total of 1,025 schoolhouses. As rapidly as avail-

able funds permit new buildings are being erected for school purposes, 87 having been built during the last year. An enrollment of 8,624 pupils in night schools throughout the island, and a large proportion being adults employed during the day, is evidence of the general desire for education that now prevails.

Business seems to be in a healthy condition and shows rapid growth.

The last two years have shown satisfactory advances in the prices for all local products, with the natural result that hitherto unimproved lands have been placed under cultivation, producing large quantities of tobacco, sugar cane and fruits of various kinds. Production figures show the sugar crop of 1911 to have been 346,785 tons, an increase of about 25 per cent. over the previous year. There was an output of 244,000,000 cigars and 406,000,000 cigarettes, a large increase over the previous year, and for all of which a satisfactory market was found.

The exportation of coffee amounted to 45,000,000 pounds, and this was an increase in production over 1910. The coffee industry in this island is one of great possibilities, and has not heretofore received the attention it deserves, but the better prices now prevailing will certainly encourage increased production.

The fruit industry is enlarging. Last year the declared value of shipments of fruits reached the figure of \$1,635,317, while the value of the home consumption—which was large—cannot be ascertained.

New Capital Invested.

Much new capital is being invested in the fruit, tobacco and sugar districts; virgin lands are being brought under cultivation, and all these industries will show important advances from year to year. There is no better grapefruit than the Porto Rican product, and the exportation, as well as that of pineapples, coconuts, tobacco, coffee and sugar, will increase in volume and value as the new lands are brought under cultivation. There are many kinds of fruits produced on this island, some of which are too delicate to admit of shipment.

There has been a wonderful increase in the external commerce of Porto Rico within the last few years. During the last fiscal year the external commerce of the island reached the sum of \$68,595,074, representing an increase of 40 per cent. over the external trade of 1901 and approximately 21 per cent. over the year ending June 30, 1910. This trade consisted of exports valued at \$37,960,219 and imports at \$30,634,855, the former being larger by 25 per cent. and the latter by 15 per cent. than during the previous year. This indicates a greater increase in sales of home products abroad than in purchases of supplies from without, and shows a balance of trade in favor of the island to the amount of \$7,325,364.

This is a creditable showing when it is considered that agriculture is the principal basis of prosperity of the island—that a large proportion of the available lands are as yet uncultivated, and that only a feeble attempt has been made at intensive farming of the lands now being tilled.

The opportunities here for capable and energetic men who have a knowledge of and feel an interest in the growing of fruits under favorable climatic conditions, are excellent, and are likely to prove profitable. Land—the strong virgin soil—can be had at prices that are not excessive and with a reasonable amount of capital and an abundance of energy there can be only a small chance of failure for the intelligent and persistent grower of fruits, tobacco and sugar cane. Frost is unknown, and for this reason the slogan of the island is, "Winter is always summer." While this is true, it is equally as true that there is no winter in the summer.

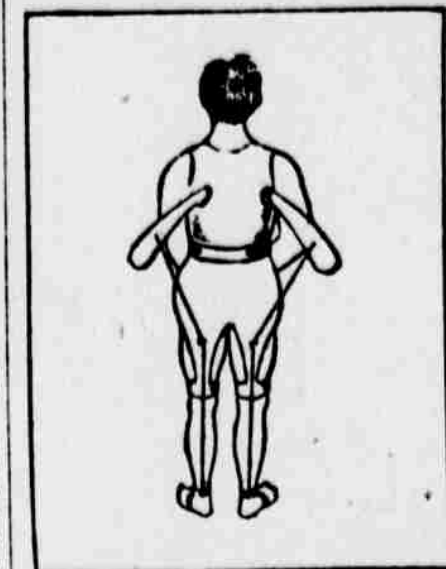
The island of Porto Rico is a charming winter resort. In the middle of winter may be seen coconuts, oranges, lemons, mango and almond trees, each bearing fruit. Only a short distance in other directions are fields of grapefruit and pineapples, while still farther on are great plantations of sugar cane and tobacco. Many kinds of fruits, the names of which are unknown in the states, grow here in wild profusion and without cultivation. It would be possible to sustain life the year through on what is found growing on bush and vine and tree every month in the year.

Corner for the Juniors

SWIMMING DEVICE IS NOVEL

Fins Attached to the Heels of Wearer Are Manipulated by Cords—Assists the Novice.

A novel swimming apparatus has been invented by two California men. It may be used to assist a novice or an expert may risk himself up in it to achieve great speed or cover greater distances than he can do unaided. A jacket made of some buoyant element, probably with strips of cork in it, has



Fins for the Swimmers.

two wings, or fins, attached to the back, over the shoulder blades, where wings usually sprout. These fins have a swivel motion and are operated by cords attached near their tips and running down through eyelets in the suit to anklets, or heel fastenings. There are springs at the swiveling connections of the fins which keep these objects normally raised above the body, but when the swimmer kicks his feet backward he draws them down and they act as propeller blades, sending him through the water with much greater velocity than he could obtain with his arms and legs alone.

CAGES FOR SINGING INSECTS

Tiny Houses, Constructed in Japan, for Little Bugs That Have Tendency Toward Music.

In Japan people keep singing insects in cages, as we do canary birds, and have them hanging about the house. They are supposed to bring good luck. In Tokyo and other cities some of the shops are devoted entirely to the sale of these bugs and their cages. The practice is beginning to show signs of becoming a fad in this country. It is doubtful, however, if the American will take the same interest in such diminutive pets as does the Japanese. Then, too, the variety of singing insects in this country is not so pleasing as it is large. The most widely known member of this family is the mosquito, who is never likely to become popular as a household pet, and



Cage for Singing Bugs.

even a cage as small as that shown in the illustration would be too roomy for him. A kind of cricket is the insect most often domesticated in Japan.

STREET GAMES FOR CHILDREN

Something New Is Being Played by Little Girls of Great City of London—Ball Is Used.

The children of the street are ultra-conservative in their games. After countless years London Bridge continues to fall upon my ear lady; the crop of oats, peas, beans and barley grows as bountifully as ever.

This season has brought a new game which is played by little girls in every part of town, announces the New York Sun. A rubber ball is bounced on the pavement and caught to the accompaniment of intricate hops and skips. In its simplest form the game is to bounce the ball on each flagstone and jump to the next without touching the crack.

Among the older children a form is used of turning completely around after the ball is dropped, clapping hands and balancing on one foot. In counting a progressive system is employed similar to that in jacks; on the first stone each motion is gone through once, on the second stone twice, etc., and the player is out as soon as she misses a count in any of the movements.

EASY TO KEEP A LOG BOOK

Apparently as Complicated as Double Entry Bookkeeping, But Little Study Solves Problem.

How many landmen know how a log book is written up? It seems just as complicated as double entry bookkeeping when one does not know, but after a little careful attention and study it's as easy to keep a log book as to eat hot gingerbread. There is a list of letters arranged and they look like so much Greek to the uneducated.

The letter b, for instance, stands for blue sky, whether there be clear or hazy atmosphere; c indicates cloudy or detached opening clouds, d denotes drizzling rain, a small f, g, a capital F thick fog, g gloomy, dark weather; h hail, l lightning and m misty or hazy so as to interfere with the view.

The letter o represents overcast, or when the whole sky is covered with one impenetrable cloud. Passing showers are noted by the letter p, and q indicates the weather to be squally. Continuous rain is indicated by an r, snow by an s, and thunder by a t.

An ugly, threatening appearance in the weather calls for the letter u, and visibility of distant objects, whether the sky be cloudy or not, is represented by the letter v. A small w is wet dew. A full point or dot under any letter denotes an extraordinary degree.

As an example of how the letters are used take p d l t. This reads very hard squalls and showers of drizzle accompanied by lightning with very heavy thunder. Numerals denote the force of the wind.

A cipher indicates calm. 1 light air, 2 light breeze, 3 gentle breeze, 4 moderate breeze, 5 fresh breeze, 6 strong breeze, 7 small gale, 8 fresh gale, 9 strong gale, 10 whole gale, 11 storm and 12 hurricane. This system of abbreviation is generally adhered to on all merchant vessels.

DO TRICKS WITH AEROPLANE

Two Swedish Acrobats Include Somersaulting Machine in Their Stage Equipment—How Worked.

In order to give a modern touch to acrobatic tricks of a kind that have been familiar to theater-goers for years, two Swedish acrobats include a somersaulting aeroplane in their



Somersaulting Aeroplane.

stage equipment, says the Popular Mechanics. At one end of a girder pivoted to a standard about 12 feet high, is a miniature aeroplane so constructed as to be able to turn somersaults. The 3-foot propeller of the machine, driven by a five horsepower two-cylinder engine, sends the aeroplane around on the end of the girder, the other end of which is provided with a counterpoise. The acrobat works the elevating plane with his feet and operates the rudder with his right hand, making the machine turn somersaults.

LESSON IN NATURAL HISTORY

Peculiar Traits of Fly, Hen, Cats, Dogs, Mice, Snake and Goldfish—How They Act.

A fly on a window pane will crawl to the top, fly back to the bottom and crawl up again. This order is seldom reversed.

Hens scratch for food with the sun behind them, the reason being that the rays reflect on the minute particles. A blind hen will pick grain and not miss a kernel.

Cats seldom lie with their feet to the fire. Usually they lie on the left side. Dogs lie with their fore paws to the fire.

A mouse will ignore a food supply sufficient for a meal and run great risks to nibble at a wholesale supply. It will hide at the source of food supply and not depart therefrom until actually disturbed. It isn't true that a mouse runs to a hole at the first alarm.

Find a harmless little snake the length of a lead pencil and provide a box for it in the house, visit it daily, and at the end of three months it will crawl to you for food.

Goldfish usually swim around a globe to the right. They can be taught to take a fly out of the hand in six weeks' time. The presence of other fish in the globe is generally ignored by goldfish. Drop a piece of chip on the surface of the water and it will frighten a fish.

He Was "Most Uncomfortable."

The following incident, told by a teacher, is quite true: "My attention was called to a wee small boy, whose shrill voice piped out above the rest. At first I was inclined to reprove him for disturbing me, but on looking at the tiny face I saw the child was really in trouble. I called him to me, and asked him what was the matter. At first he would not tell me, but finally he said: "Please, ma'am, I can't sit down. This morning I got my trousers on wrong side afore, and I'm most uncomfortable. I want to go home."