

Science Notes.

Tea-Leaf Smoking.—According to Cassell's Saturday Magazine, it has become a fashionable distraction in England to smoke green tea in the form of cigarettes. A large number of the adepts of this new pastime, says the English journal, are highly educated women. A physician who has had occasion to treat patients for extreme nervousness and insomnia due to this practice states that among them there is a well known female writer whose novels are widely read and who habitually smokes from twenty to thirty tea cigarettes while working.

"At the home of a well known lady whom I am attending," says he, "tea cigarettes are always passed around after dinner, and I know three celebrated actresses who give tea smoking parties twice a week. A number of literary ladies at Kensington have formed a small club for the same purpose. One of my patients spends nearly two pounds a week to satisfy her mania. This habit, moreover, is spreading to such an extent that certain tobacco dealers are now offering packages of tea cigarettes to the public."

Psychophotography.—That real images of objects are formed upon the human retina and persist temporarily seems to be proved by a series of experiments made by Mr. W. Ingles Rogers and described by him in the Amateur Photographer for November 22, 1895. Mr. Rogers took a shilling and looked at it intently in ordinary daylight for fully a minute, with the idea of fixing the image of it distinctly upon the retina. He then drew a yellow screen over the window of the room in which he sat, so as to exclude all actinic light, and, placing a photographic plate in a certain position, fixed his eyes upon the center of it, at the same time allowing nothing but the image of the coin to occupy his mind. He remained looking at the plate for forty-three minutes and afterward developed it, with the result that an outline of the coin was clearly shown upon it. The second experiment, made in the presence of three trustworthy witnesses whose testimony accompanies Mr. Rogers' communication, was still more remarkable in its result. In this case a postage stamp was substituted for the shilling. This was gazed at in a strong light for one minute. It was then removed and a plate put in its place and looked at for twenty minutes. The resulting "psychogram," which is reproduced in the Amateur Photographer, lacked detail, but sufficient was shown to prove that the picture of an object impressed upon the retina can send out vibrations that will result in the production of an image upon a sensitized plate.

The Power of Guns.—One might be accused of romancing were he to assert that a gun is of several million horse power, and yet nothing is more exact, as we shall demonstrate. The Italian 100 ton gun (model of 1879), with a 550 pound charge of powder, throws a projectile weighing 2,020 pounds at an initial velocity of 1,715 feet per second. It communicates to it, therefore, a live power or kinetic force of 92,597,000 foot pounds. The thrust exerted by the gases due to the ignition of the powder lasts less than a hundredth of a second. The result is that during the active period of the work of the powder in the gun, the mean power is greater than 87 million foot pounds per hundredth of a second, say 8,700 million foot pounds per second. This represents a power of 12 million kilowatts or 17 million horse power.

There is unfortunately another side to this picture. Although large guns are extraordinarily powerful, their active life is essentially ephemeral, since, after a hundred shots, they are generally out of service. They have then worked actively one second!

The same calculation applied to modern guns that throw 2,200 pound projectiles, and communicate thereto an initial velocity of 1,970 feet a second, demonstrates, further, that such guns, during less than a hundredth of a second each time, develop a formidable power of 13,050,000,000 foot pounds per second, say 24,000,000 horse power.

Taking Impressions of Plants.—The following simple method of taking impressions of plants is due to Mr. Bertot, of the French Academy of Sciences. A sheet of paper is first lightly oiled on one side, and then folded in four, so that the oil may filter through the pores, and the plant may not come into direct contact with the liquid. The plant is placed between the leaves of the second folding, and in this position is pressed, through other paper, all over with the hand, so as to cause a small quantity of oil to adhere to the surface. Then it is taken out and placed carefully upon white paper, another sheet is placed above (as two impressions can be taken out at once) and the plant is pressed as before. Upon now removing it, an invisible image remains on the paper. Over this is sprinkled powdered black lead, which causes the image to appear. With an assortment of pigments, the natural colors of plants may be reproduced. To obtain fixity, resin is mixed with the color in small quantity. The impression becomes fixed when it is exposed to a heat sufficient to melt the resin.

Prevention of the Freezing of Gas Pipes.—It has been thought up to the present that the freezing of gas pipes in winter is due solely to the aqueous vapor

carried along, and which, under the influence of the cold, is first condensed and then congealed, so as to obstruct the pipes. An attempt has been made to overcome this inconvenience by drying the gas through the action of concentrated sulphuric acid. But during the course of last winter it was found that, despite such precaution, there occurred numerous cases of freezing that had to be attributed to the congelation of the benzole. It, therefore, became necessary to seek another process which should prove efficacious in both cases at once. A process of this kind, recently patented by the Deutsche Continental Gas Gesellschaft, of Dessau, consists in injecting into the gas upon its exit from the gasometer a determinate quantity of vapor of alcohol. If, under the action of cold, the aqueous vapor and benzol condense, it will be the same with the alcohol, the introduction of which into the mixture will lower the point of congelation, and hence prevent the obstruction of the conduits.

The experiments made last winter demonstrated that the influence of the alcoholic vapor makes itself felt at a distance of two and a half miles from the gasometer. On the contrary, it disappears as soon as the gas passes through a wet meter. So the inventors advise the installation of a small injector alongside of the meter in factories, railway stations, etc., in order to permit of adding alcoholic vapor anew to the gas. The proportion of alcohol necessary is 5 grammes of impure 95° alcohol to the cubic meter of gas. In extremely cold weather the proportion of alcohol may be raised to 6 or 7 grammes. The addition of this small quantity of alcohol has no influence upon the calorific or illuminating power of the gas.

AN IMPROVED BICYCLE LAMP BRACKET.

The illustration represents a simple and durable lamp bracket patented by James E. Bean,



THE UNITED STATES DETACHABLE LAMP BRACKET.

readily attached to and removed from a bicycle without disconnecting the lamp and the bracket. The improvement is being introduced by United States Manufacturing Company, Fond du Lac, Wis. In the illustration, B represents the bracket, which is held in place by a strong spring catch at its lower end, but may be readily removed, leaving only the small clip, A, attached under the axle nut. The catch is very strong, and may be made as tight as the user desires, so that it will never shake off or get loose.

Treasure Houses in New York.

"If the New York dry goods district should be destroyed to-night," said a business man to a representative of the Sun, "every great insurance company in the world would fail." Doubtless there is some exaggeration in such an opinion, but there are \$900,000,000 worth of insurable goods in the comparatively small down-town area known as the dry goods district, to say nothing of buildings, furniture, and fixtures. London and perhaps Paris are the only other cities in the world that equal New York as treasure houses of manufactured goods.

A single wholesale and retail house in the fashionable shopping district of Broadway contains \$11,000,000 worth of goods. Another house in Twenty-third Street contains \$6,000,000 worth. There must be scores of business houses containing from \$1,000,000 to \$5,000,000 worth of goods. The goods stored in three or four business districts would more than pay the national debt. The goods in the great clothing district run up into the hundreds of millions. The little jewelry district downtown is one of the richest urban areas in the world. Silverware, gold, and jewels valued at hundreds of millions are stored in the district centered about Union Square. The samples of a single hat house brought at auction in a recent year \$70,000. Some of the most precious articles in proportion to bulk are stored in the drug and chemical and perfumery houses in the region south of Fulton Street and east of William. The book publishing district, now stringing itself along from Astor Place to Twenty-fifth Street, is stocked with many million dollars' worth of books. Single buildings with their contents and the land they occupy are worth more than the assessed value of many a rural county in this State.

New York Section of the American Chemical Society.

The regular monthly meeting of the Chemical Society will be held on Friday, February 7, at 8:30 P. M., in the chemical lecture room of the College of the City of New York. The usual informal dinner will precede the meeting and will be at the Hotel Bartholdi, Broadway and Twenty-third Street, at 6:30 o'clock.

American Trade in Venezuela.

If any appreciable increase in the imports from the United States into Venezuela is perceptible, it is simply due to recent and better facilities for the distribution of merchandise, and is confined to such articles as heretofore imported—flour, lard, hams, kerosene, "blended" butter, lumber, some kinds of hardware, common glassware, etc.; but the essential feature of our trade—the general introduction of our manufactured goods—is still wanting.

The stereotyped complaints about the independence of our manufacturers at first impels the belief that they do not want the Latin-American trade, but I am beginning to doubt the sincerity and validity of this criticism, invariably advanced by foreign merchants having their chief houses in Europe, and controlling nearly all branches of trade. If my suspicions are well founded, these statements are made to deceive the small native merchant and compel the purchase of such goods as it may be to the interest of the foreigner to further, which almost invariably means European. His present control of the market enables him to dictate both the place whence and the kind of goods he will import and sell, without regard to native taste, which, thus far, he has cultivated in one direction. Until some purely American houses are established in Venezuela, aided by a friendly native sympathy and sentiment, we cannot hope to make great inroads in the sale of manufactured goods.

An important item of importation is fine table butter, which is now almost wholly supplied by Denmark, and costs, delivered at Hamburg, about 30 cents, put up in tin cans of one-half pound and upward, hermetically sealed. I am convinced if some dairy near New York were to make an effort to secure part of this trade, it would prove successful and profitable. American butter as at present packed—with no view to its preservation in this climate—is justly in bad odor. To obtain the trade of an article of such universal consumption, is at least a good subject for investigation.

Until within three or four years, comparatively little cutlery was imported from the United States. Since then some improvement is visible, and it is within the power of our manufacturers to increase their sales in this line.

The largest native dealer in cutlery and hardware showed me through his warehouse, explaining the needs of the trade and wherein Germans, English, and Americans excelled, and expressed an earnest desire to make closer connections with American manufacturers, and his willingness to send them samples of various goods, believing that when once thoroughly acquainted with Venezuelan trade our people could obtain a greater share than they have at present secured. This opinion I fully share.

In brief, we have made a beginning in the sale of knives, forks, hatchets, axes, hammers, and files (the latter preferred to all others), while crowbars, shovels, spades, hoes, scissors, etc., are almost exclusively purchased in England and Germany, in addition to everything bought in the United States.

The machete, of which tens of thousands are sold annually, are all bought in England. The machete is simply a very large and broad knife, slightly varying in size, but usually about 18 to 22 inches long and 2 to 3 inches broad, with which the Latin-American cannot dispense, and which he applies to more uses than one can conceive.

VENEZUELAN MANUFACTURES.

Venezuela is solely an agricultural country. Its factories are few, often of the crudest kind and devoted to the manufacture of the most pressing native wants, such as sole leather, soap, candles, matches, cigarettes, rum, native shoes (alpargatas), hats, and sugar.

The manufacture of sole leather seems to have acquired an impetus and support, for which its large consumption and the high duty thereon seems responsible. Puerto Cabello supports two tanneries, one electric, the other employing the usual improved methods. The output of the latter is about 27,800 pounds per week, with the prospect of the plant being enlarged and the output increased. French and English machinery is employed. I am not aware of any tannery in the country manufacturing uppers. As Venezuela exports large quantities of goat and deer skins and hides, suitable for uppers, the suggestion is made that it might prove profitable if some large tannery in the United States would establish a branch in this country for this purpose, with American machinery and conducted on American principles. The duty on manufactured leather being \$4 per kilogramme (2.2 pounds), and on the unmanufactured 50 cents per kilogramme, the poor people are practically debarred from its general use, and confine themselves, for ordinary wear, to the native alpargata, a modified scriptural sandal composed of a solid piece of sole leather, shaped for the foot, with a woven cotton upper, having an outlet for the big toe, a piece of similar material secured to the leather heel, and then passed over and fastened to the upper part of the heel of the foot.

The importation of sugar being prohibited, all large cane plantations have their sugar mills, with more or less advanced processes for placing the product on the

market, but no refinery exists in Venezuela, and all sugar sold ranges from a very dark to a light brown.

Soap is made from native coconut oil, and candles from stearin imported from Europe. Both industries are not only among the most profitable, but also of the greatest magnitude in Venezuela, the high duty giving them a monopoly in the common grade of these articles. Fancy and fine perfumed soap is not manufactured.

Rum and cigarettes are made from native products. Tobacco of excellent quality is grown and employed in the manufacture of the latter, together with considerable Cuban tobacco. Both industries seem to have reached a profitable base.

The alpargata (shoe) is manufactured, or rather put together, by numerous small factories, the woven cotton being usually purchased from the large factory in Valencia which makes a specialty of this article.

TARIFF.

The tariff of the country is divided into nine classes. Duty is charged on the gross weight. A package of merchandise containing any article belonging to a higher class pays duty on the whole as of that class.

BANKING FACILITIES.

The want of banking facilities is often keenly felt. The two banks of Caracas and that of Maracaibo are the only institutions of the kind in the country, and with agencies limited as to the places and transactions, have, under prudent management, proved very profitable and beneficial to the business interests of the country. The want of such institutions in agricultural districts is generally recognized and deplored, and I can suggest no more profitable undertaking than one of this character, based on large capital and commercial standing. Large planters often require ready money to carry on their operations, and are compelled to resort either to the large merchant or usurer. In either case, he pays a rate of interest seldom less than 12 per cent, and not unusually 18 per cent per annum. If he deals with the former, he may be expected to purchase his supplies from him, paying a large profit on the sale. The planter's paper and collateral are unquestioned.

Often strangers with the best bills of credit find themselves remote from these legitimate institutions and are forced to submit to such a rate of exchange as the merchant may exact.

Attempts have, at various times, been made to obtain banking concessions, but always accompanied with such conditions as to make their denial necessary and imperative.

American capital invested in banks would be as safe and secure as at home. An American bank and American business houses are the only factors that will loosen the grip of European exporters.

FINANCE AND CURRENCY.

All values in this country are based on gold—gold of all nations being current as a commodity. Silver of other countries is forbidden circulation, but that of Venezuela is on a parity with its gold and is accepted in payment of all dues, public and private, without loss. This is due to the fact that, at present, no silver is coined and never has been, in excess of the government's ability to redeem it in gold. It is generally understood that were this limit of ability passed, the same conditions would exist here that prevail in all other South American republics, namely, silver would be at a large discount, and the poorer classes would suffer in the payment of their dues. Venezuela is, therefore, proud of the standing its silver coin has among the nations of the world.

The last Congress prohibited the emission of paper money by the government. The paper money in circulation is that of the banks at Caracas and Maracaibo, the only institutions authorized to issue paper money. For this money the government is in no wise responsible its acceptance not being compulsory, and it circulates only on the credit and integrity of the banks and in their own vicinity. Its issue is very limited.

INLAND TRANSPORTATION.

Until some few years ago, Venezuela was without a railroad. Now, not only are the ports of La Guayra and Puerto Cabello connected with Caracas by rail, but Barquisimeto and other places with the coast in like manner, while many railroad "concessions" for the development of the remote interior seem to have acquired new life. If any of the many rumors are to be believed, Venezuela must soon enter upon a rapid development of its best, but heretofore neglected, territory.

San Felipe will, at an early date, be connected with Puerto Cabello by a line of small steamers and a substantial "tramway," affording unprecedented facilities for exporting the products of that section of the country and distributing the imports, with a certainty, safety, and rapidity heretofore unattained.

The Yaracuy Navigation Company, chartered in the State of New Jersey, with its main business office in the city of New York, has secured control of a Venezuelan concession to colonize and navigate the Yaracuy River, a waterway running through one of the richest

forest, coffee, cocoa, and copper districts in the republic. The mouth of the river is 12 miles from this port, and will be navigated for a distance of about 30 miles and then connected with San Felipe (the storehouse and distributing point of that district) by a substantial tramway of about 25 miles. Being the only distinctive American enterprise in this district, other than the electric plant, I am happy to report that I believe this is an actuality and not a syndicate myth. The company has now three small steamers, with apparatus, at work clearing the river of obstructions. It is backed by well known New York capitalists.

MINERALS AND WOODS.

Tradition is that many rich gold and silver mines, worked both by the old Indians and Spaniards, exist in this consular district, not over 50 miles from Puerto Cabello. Fine and valuable specimens of both metals are constantly found, but no systematic efforts have heretofore been made to explore the country. Within the past three months, some of the American capitalists connected with the Yaracuy Navigation Company have sent out a number of New York mining engineers, who are at present prospecting the country. As they have not yet returned and no reports have been received, I am unable at this time to inform the department what success, if any, has attended their search.

This section of the country is noted for its productive copper mines. The Quebrada Company (English) operating those at Aroa have recently shut down mines and smelter owing to the great depression in the copper market. The quality of the ore produced is equaled by few mines in the world.

The Quebrada Railroad, built by the same company, for the purpose of transporting their product to the coast, is still in operation in conjunction with its leased lines—the Great Southwestern Railroad—connecting the large town of Barquisimeto with the coast of Tucacas (105 miles of road in all).

Phosphates, almost pure, are found near the coast, not far from this port, and only await a higher market and capital to develop.

The forests throughout the interior in this consular district consist mainly of hard, fancy cabinet woods, such as mahogany, ebony, lignum vitæ, cedar, green heart, etc., and will no doubt soon become an important item of export, in consequence of the operations of the Yaracuy Navigation Company.

PUERTO CABELLO.

The population of Puerto Cabello is now about 12,000, but as this is the largest port of entry in the country, next to La Guayra, the magnitude of its business cannot be measured by its population. On the other hand, it is one of the most metropolitan towns in the country and is an attractive place, comparatively speaking, containing four pretty parks and a theater, excellent water and waterworks, clean streets for a place without sewerage, pleasant dwellings, and handsome storehouses. Tracks are now being laid for a street tramway, with the object of transporting freight only from the warehouses of the merchants to the wharf, and not intended for passenger service.

The heat here is greatly tempered by the pleasant sea breezes that prevail during the day and evening and the mountain breezes at night, making the mornings and nights pleasant as a general thing throughout the year.

Puerto Cabello has the reputation of being an unhealthy place, and is so indicated in all encyclopedias. This possibly originated in an epidemic of yellow fever confined to some ships in the harbor about the year 1876, during which most of the ships lost nearly all their crews. The fever did not, however, spread to the town, and was brought here by these ships. Since then no epidemic or even an approach to one has appeared, either in town or harbor, and the uncorrected statement does gross injustice to the town. My own residence here enables me to contradict this generally accepted foreign opinion.

COST OF LIVING, WAGES, ETC.

The poorer classes of Venezuelans live mainly on fish and fruits. The few articles of manufactured goods used by them are confined to the most pressing wants and of the commonest grades.

Rent is exceedingly high. An ordinary pleasant dwelling costs from \$60 to \$80 per month, and what is termed a handsome house rents for from \$100 to \$120 per month. A house renting for \$30 per month would be located in an undesirable, often in an unenviable, quarter of the town, and shabby both in exterior and interior appearance. The luxury our poor enjoy in the way of small, neat, and cheap houses or apartments is unknown in this country.

Table board, with which a foreigner must be content, and to which the better class native is accustomed, costs \$35 (United States gold) per month. Flour that sells for \$2.50 and \$3 per barrel at home costs \$10 to \$11 gold at the ports and often twice as much and more in the interior towns. Eggs are 40 to 60 cents per dozen; potatoes, 8 cents per pound; meat, 15 to 30 cents per pound; sugar, 16 to 20 cents per pound; and all other imported and native products in proportion.

Though this is an agricultural country, the native seems devoted to raising coffee, cocoa, and like products to the almost total neglect of good vegetables. Hence, we often see the peculiar spectacle of imported vegetables in a country that could with proper management export them.

Incandescent light is furnished at very cheap rates.

SAMUEL PROSKAUER, Consul.

Puerto Cabello, September, 1895.

Train Detentions.

At the December meeting of the New York Railroad Club the subject of the cause of train detentions was discussed. The discussion was opened by Mr. C. M. Mendenhall, of the Pennsylvania Railroad, who had compiled the following table:

CAUSES OF PASSENGER TRAIN DETENTION.

89.3 per cent.....	Arbitrary. Traffic. Operation.	
	Hot journals.....	33 per cent.
	Hot eccentrics..	3 "
	Steam failures..	24 "
	Brake failures..	13 "
	Taking water..	5 "
	Engines, 55 per cent.	
	Couplers,	
	Injectors,	
	Steam heat,	5 "
	Markers,	
	Miscellaneous..	17 "
10.7 per cent equip-ment.....		100 "
	Cars, 45 per cent.....	
	Hot journals.....	48 "
	Brakes.....	38 "
	Steam heat.....	4 "
	Parting.....	5 "
	Miscellaneous..	5 "
		100 "

This, it will be observed, refers to passenger trains only, and Mr. Mendenhall explained that it does not represent all causes of detention, although we suppose it represents all cases of which he had records available. For example, under the head of Miscellaneous is a considerable group of detentions which could not well be classified, there being so few of them. He assumes one minute as the minimum delay; that is, he means by "late" within one minute of schedule time, and he believes that, if the records are carefully examined, it will be found that 34 percent of passenger trains will arrive late at their destination. This, of course, will vary in different months of the year. The passenger schedules are generally so slow that more or less time lost can be made up, more in summer and less in winter. He was not able to give the relative number of detentions under the headings Arbitrary, Traffic and Operation, but the total of these three classes he has found to be about 89.3 per cent of all detentions. This leaves 10.7 per cent due to equipment, and of the equipment failures 55 per cent is due to engines and 45 per cent to cars. The further analysis of the causes is shown in the table.—Railroad Gazette.

Typewriter Inks.

Take petrolatum of high boiling point, melt it on a water bath or slow fire, and incorporate by constant stirring as much lampblack or powdered dropblack as it will take up without becoming granular. If the fat remains in excess, the print is liable to have a greasy outline; if the color is in excess, the print will not be clear. Remove the mixture from the fire, and while it is cooling mix equal parts of petroleum, benzine, and rectified oil of turpentine, in which dissolve the fatty ink, introduced in small portions by constant agitation. The volatile solvents should be in such quantity that the fluid ink is of the consistence of fresh oil paint. Apply the ink, after agitation, by means of a soft brush, and rub it well into the interstices of the ribbon with a toothbrush. Hardly any ink should remain visible on the surface. For colored inks use Prussian blue, red lead, etc., and especially the aniline colors. For black try the following:

Aniline black.....	1/4 oz.
Alcohol.....	15 fl. oz.
Glycerine.....	15 fl. oz.

Dissolve the aniline black in the alcohol, and add the glycerine. Ink as before.

TYPewriter Copying Ink.

Transparent soap.....	1 oz.
Glycerine.....	4 fl. oz.
Water.....	12 fl. oz.
Alcohol.....	1/4 fl. oz.
Aniline dye.....	Sufficient.

Dissolve the soap in the water and glycerine, with the aid of heat; dissolve the aniline in the alcohol, and mix the two solutions. If the ink is too soft, add more soap.—T. L. L.

Gets a Medal for Speed.

Engineer William Tunkey, who pulled the Lake Shore's record-breaking train from Erie to Buffalo last October, has just been given an elaborate silver medal by W. K. Vanderbilt and W. Seward Webb. Mr. Tunkey's ability as an engineer saved this trial of speed from being a failure, for when the train reached Erie it seemed irretrievably behind the scheduled time, and Mr. Tunkey's quick work saved the day. The medal given to Mr. Tunkey is of solid silver, weighs nearly two pounds, and is a work of art.