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WAR BETWEEN JAPAN AND CHINA.

The commencement of hostilities between Japan and China, for some time previous seriously threatened, is said to have occurred on July 25, when a fleet of Chinese transports, loaded with troops, was attacked off the Corean coast by Japanese gunboats, and many Chinese soldiers were killed and drowned. The cause of the difficulty between the two countries lies in their respective claims upon Corea, a peninsula on the northeast coast of China, sometimes called the "hermit" kingdom, and from which foreigners have been generally excluded. Both countries have at different times set up pretensions to the territory, and asserted more or less certain rights of suzerainty. The Japanese are now apparently determined to maintain their claims by force of arms, and have been in advance of China in sending to Corea troops and war vessels, the Japanese also having made the King of Corea a prisoner in his palace, where he is held as a hostage.

In any war between Japan and China, especial interest will be felt because of the fact that both countries have many fine modern war vessels, armored and unarmored, carrying guns of high power, and are also well supplied with torpedo boats. The organization of the Japanese navy has largely been carried out upon English plans and with English ideas of discipline. It includes five armorclads, one very recently built, and thirty-two cruisers and unarmored vessels, with forty-two torpedo boats. The *personnel* of the Japanese navy is probably far superior to that of China, although the strength of the latter is very much greater, representing a complete navy of the modern type. In its North Coast squadron, which would be likely to be first brought into action, are five sea-going armorclads, two of 7,280 tons each, three deck-protected cruisers, three torpedo cruisers, a fleet of over thirty torpedo boats, and eleven gunboats. Many of these vessels represent some of the best features of English, German, and French modern war ships, and in their armor and armament are types of the advancement of European countries in preparation for war at sea. There is much room to question as to whether these vessels will be efficiently handled by their Chinese and Japanese crews, but the outcome of any engagement in which they participate will be looked for with the greatest interest.

It is only within some twenty years past that China has been able sufficiently to overcome prejudices as old as its history to undertake seriously the building of a modern navy. There was as long and violent an opposition in the Flowery Kingdom to the countenance of European ideas upon war ships as there was to the introduction of steam railroads, and during this period the Chinese navy consisted of a countless fleet of high-prowed, piratical looking wooden junks, with antiquated muzzle-loaders. But since the new programme has been entered upon in earnest, China has, in a comparatively brief time, supplied herself with a wonderfully complete equipment in all the details of a powerful modern navy. Their fleets are now officered almost exclusively by Chinamen, and so far as practice maneuvering is concerned, the reports of their operations have been highly favorable.

Party Walls.

An important decision in regard to party walls was given by the Massachusetts Supreme Court the other day. Many years ago a certain land owner, who may be called A, built two houses on Bedford Street, with a party wall between them, and subsequently sold the houses to different purchasers, without any stipulation as to the use of the party wall. B, who succeeded to the rights of one of the purchasers, strengthened the foundations of the party wall, and added to its height, for his own purposes, paying all the expense of doing so himself. Afterward, C, the owner of the adjoining estate, built his house higher, using, for that purpose, the party wall which had already been carried up. The representatives of B demanded of C payment for a part of the cost of the addition which had been made to the party wall, which C had now untilized. C refused to pay anything, and a suit was brought, which has just been decided in favor of the defendant, the court holding that there was no stipulation or agreement in any form, binding the defendant to pay for the use of the wall, and that no such agreement could be implied; and that the defendant was entitled to use without payment, in the way he did, so much of the wall as he found standing on his own land. It may be remarked that there is no general party wall statute in Massachusetts, and no legislation defining the rights of persons who find themselves in possession of a wall built partly on land of another; so that the court probably felt itself obliged to fall back on the common law rule, that every man is the absolute owner of whatever may be built on his land, no matter how it may have come there. Nevertheless, the building of a wall partly on each of two adjoining estates, or even two parts of one estate, indicates that each party receives value from the other, in the form of a saving of expense, and of available land, in return for which he gives the right to place half the wall on his land, and pays half the expense of building it; and it would not be a very violent assumption to consider that the rights and obligations so conceded and incurred attached to the land, so long as the wall built in common was used by both parties. A provision to this effect might with propriety be embodied in future legislation, and would have the advantage, not only of preventing the appropriation without payment of other people's labors, but of promoting the construction of party walls, which, particularly in a city of pile foundations, like Boston, represent, where properly arranged, stability of construction, and great saving of expense and of valuable room.—*American Architect.*

The Motion of the Heavenly Bodies.

It has been said of nature that it detests a vacuum, but it is equally true to say that it has a horror for rest. There is no word which is only so relatively true as the word rest, and none that is more absolutely true than the word motion. There is not an object on this earth, or, in fact, in the whole universe, of which it may be said with certainty that it is at rest. The only point of which we may imagine that it is at absolute rest is the center of gravity of the whole created universe, a point the exact position of which will in all probability never be ascertained. The real motion of the celestial bodies is a subject the investigation of which called into play the highest analytical and observational powers of man, and forms one of the greatest epochs in the history of the astronomical science. That in our solar system to the sun was assigned the central position is by no means a fact of remote antiquity, for even Copernicus, to whom is attributed the establishment of the new system, could not entirely shake himself free from the shackles of the ancient theory that the earth occupies the most prominent place in the solar system; nor did a full conception and conviction of the true state of that system take possession of man until Kepler and Newton, by their great laws, based upon the irrefutable principles of mathematics, once and for all exploded the old theory and placed the new one beyond the possibility of dispute and doubt.

With the establishment of the Copernican system, astronomy received a new and vigorous impulse. Magnifying instruments were improved, calculations put upon a more vigorous basis, the pure mathematical science itself being infused with new power by the Cartesian method of geometry and the grand discovery of the calculus by Leibnitz and Newton, observations were extended into the very infinitude of space, phenomena which before had either not been noticed, or, if noticed at all, had baffled all attempts at explanation, were explained in a manner which left no room for doubt. And so it was announced one day to the marveling world that the sun, the central body of the solar system, around which are whirled in never-ceasing harmonious motion the planets with their satellites, the comets, meteors, and aerolites, was not fixed, but, like his vassals, had a twofold motion on his axis and around some point so distant that its exact position has as yet not been ascertained. The axial motion of the sun was established by the sun spots, but as to its motion through space, we only know that its direction is toward the constellation Hercules.

There is something grand in the idea of satellites revolving about planets, planets around the sun, all of these at the same time rotating about their axes, and the sun itself sailing into endless space, but this is not all. There cannot be any doubt that all those glorious suns we see glittering in the firmament are also moving in their appointed paths. The proper motion of a number of them has been detected, and by the principles of induction and analogy we are not alone justified in, but almost forced to, the belief that motion is a common property of them all. There is a class of stars which, when viewed through powerful telescopes, reveal the remarkable fact of their consisting in reality of two or three, nay, even more stars. At present we know six thousand such systems. In Orion there is a star, known as Theta Orionis, which, when viewed through a powerful telescope, appears as a septuple star, thus presenting the magnificent panorama of seven suns revolving about each other. It is to be supposed that each of these suns is encircled by planets, and these again by moons, exhibiting to the imagination a spectacle sublime beyond description. Though the human eye will never behold the planets that are whirled around those glorious double and multiple orbs, the human mind cannot but be impressed with the divine harmony pervading the astral creation.—*Baltimore Sun.*

New Activity of the Yellowstone Geyser.

A telegram received says a shock resembling an earthquake was felt at Norris Geyser Basin, Yellowstone Park, at 3 A. M., July 21. The new crater geyser, which had been quiet for some time, broke out with terrific force, throwing rocks weighing twenty-five pounds to a height of 200 feet and steam rising 500 feet, accompanied by a roar equaling the combined exhaust of a thousand locomotives, which could be heard for ten miles. Every geyser in the Norris Basin played for hours. It now surpasses any geyser in the park.

Santa Catalina.

As the mainland of California advances in population and importance in the eyes of the world, the attractions of its environment naturally become better known and appreciated. This remark is especially true with reference to the picturesque islands which lie off the coast of southern California and add so much to the beauty of the ocean views westward from the mainland. Until within the last decade these islands were only viewed from this distance, except by fishermen and goat herders and scientific explorers. Their characteristic charms of scenery and climate were unknown to the public, except by hearsay. Recently, however, there has been an enterprising effort to make some of the islands more accessible and available for public enjoyment, and at present Santa Catalina island may be counted among the leading popular resorts of the State.

Santa Catalina island lies in the Pacific Ocean, about 25 miles southwest of San Pedro harbor, in Los Angeles county. It is approximately 25 miles in length, and perhaps 6 miles in width at its widest part, but throughout its greatest length it is but 1 to 3 miles from side to side. This gives the island a long shore line and plenty of room for the visitor who likes long walks or sails. There is much of interest, too, both in its land and water resources. The water teems with fish, and the land abounds with minerals of great interest and beauty.

Catalina is not only a resort of no little prominence, but is fast coming to the front by adding wealth to our southern country. Valuable quarries of soapstone and serpentine, ornamental and building stone have been opened and are causing great interest among the building community. The serpentine stone is very beautiful, having, on account of its different colored veins, the appearance of onyx. The soapstone quarries are situated in a very romantic part of the island, and it adds to their interest to find old excavations where the Indians quarried soapstone to make culinary utensils more than 150 years ago. Thus early did Catalina pay tribute to the mainland.

Both summer and winter the island is a charming resort. Its climate is much milder than the adjacent mainland. All winter long Catalina is lovely, with its mountains and valleys of green, its still, crystal-like waters, and its beautiful little city of Avalon, which has an appearance of its own, climate of its own and natural advantages of its own, unlike any place but Avalon. No frosts visit the valley in which Avalon is built, so bananas and other tropical fruit grow there on luxuriant trees, bearing no signs of cold weather.—*Min. and Sci. Press.*

History of Beet Sugar and the Sugar Beet.

One constantly finds in the general press discussions relating to the origin of the beet and the evolution through which it has passed. Many of these effusions are very erroneous. With the view of keeping our readers in the correct path, we have consulted many authorities, such as M. Briem and others, and find that in some details there is not an entire accord.

In 1747, A. S. Marggraf published his pamphlet giving in some detail the experiments he had made upon corn stalks, grape juice, maple, potatoes and white and red beets. From one-half pound white beets he extracted one-half ounce sugar. From that time serious experiments commenced in several European centers. The principal writers upon the subject were Rampf, Achard, Meyer, Goettling, etc.

Beets were planted everywhere in Europe. The most important of all these experiments were those of Vilmorin in 1775, in Russia during 1800 and subsequently. Experiments under Conrad Adam were carried on in Vienna in 1799. The most important of all, however, were those of F. C. Achard, in 1786. At his farm not less than twenty-two varieties of beets were experimented upon, and as a result of these observations his book on the manufacture of beet sugar was issued.

Considerable money was expended, and the practical results were not published until 1799. The ten pounds of beet sugar extracted were sent to Frederick William III., and a request made for governmental aid, so that experiments might continue. With 50,000 thalers from the King's private purse Achard was able to start the first beet sugar factory of the world at Cunern, in Silesia. The factory worked for the first time in 1802.

Efforts are said to have been made to bribe Achard to declare that he had made a mistake; that beet sugar did not promise for the future what he had supposed. The offer of a fortune was declined, and the world now knows what an important industry it has become. To follow the sugar beet through various stages of its history is almost an impossibility; but it was not until the 18th century that a standard name was attributed to this root; its use at that period was almost entirely for feeding purposes.

Olivier de Serres mentions the beet as early as 1590; other authorities declare that it was brought to Germany from Holland. In Austria it was certainly known during last century.

The white beet, with white neck and skin, was considered the best, and from it was the starting point of all existing varieties.

The name *Beta* has a Celtic origin, and is shown to have existed several centuries before Christ. It was then evidently a sort of mangold. Just whether it comes from a wild variety, existing in Southern Europe, and to which is given the name *Beta maritima*, no one can decide. A fact of importance is, as pointed out by Schindler, that the flower of the existing sugar beet has many points in common with its early ancestor, whose descendants are in existence today. The pollen grains are, however, smaller, and the wild beet has many more lateral roots than the ameliorated types. It is to Achard again to whom must be attributed the methods of early selection, and he demonstrated that it was possible to still further improve the beet, which prediction has proved true.—*Sugar Beet.*

Artificial Fruit Sugar.

Consul Frank H. Mason, of Frankfort, Germany, writes the State Department about a recent chemical discovery which will be of great practical interest in those portions of the United States where the preservation of fruits has become an established industry. The discovery is a process by which fruit sugar may be manufactured from beet juice as an improved product specially adapted to certain purposes. Dr. O. Follenius, director of the sugar beet factories at Hamburg and Hattersheim, near Frankfort, is the inventor. The invention has been patented in Germany and other European countries, but not in the United States. It consists in the inversion of beet sugar at a certain stage of its manufacture by chemical treatment into what is technically designated "laculose," which is chemically identical with the natural fruit sugar developed in greater or less degree in most kinds of fruit. Fruit sugar differs both in taste and chemical composition from cane sugar. Although of recent invention, it is largely used in Germany for perfecting wines, as well as in the manufacture of fine liquors, and is far superior to ordinary sugar for making lemonade or other preparations in which the saccharine principle is brought into contact with acid juices.

Mr. Mason writes that the sugar manufactured by this proces is a limpid, white sirup of great density, containing from 75 to 76 per cent of sugar, and possessing among other valuable qualities a rich, fruity flavor, as of natural fruit sugar, and the capacity to remain fluid and free from granulation for an indefinite period, notwithstanding its high degree of density. It is well known that ordinary white sirup containing 65 per cent or more of sugar crystallizes and forms granular deposits, and when used for preserving fruits often candies to such a degree that the preserves have to be recooked to restore the desired smoothness and fluidity. The artificial fruit sugar, on the contrary, remains smooth and fluid under all conditions.

But the quality which chiefly determines its commercial value is its power to assimilate, develop and preserve the natural aromatic flavor of the fruit to which it is applied as a preserving material. Confectioners, fruit packers and skilled housekeepers, who have tested it quite extensively during the past year in the preservation of cherries, strawberries, peaches and various other fruits, pronounce it far superior for such purposes to any other known form of sugar, and cite among its other advantages that it is always ready for use, and eliminates wholly from the factory all incidental processes of dissolving and refining the sirup.—*Bradstreet's.*

Stone Carving in Paris.

The London carver of stone rarely works from a model, more often from a sketch, and not infrequently without either; the Parisian always has a model. The Londoner, with his plumb-bob, rule and compasses, generally makes an approximate copy of his model when he has one; the Parisian, by means of a mechanical contrivance called a pointing machine, makes an exact copy. The Parisian system no doubt has its advantages, but from the English workman's and from an artistic point of view, the Londoner's method is far the best, throwing the workman on his own resources and developing whatever individuality and artistic feeling he may possess. It has also the not unimportant merit of being the quicker method. The material used in Paris is a cream-colored soft stone, somewhat resembling Bath stone, but apparently freer in working. In London, as is well known, every variety of stone is used, from the soft Corsham to the hardest of Portland among the limestones, and from the softest of red grits to the hard yellow gritstones of the North of England. This has developed a more useful pattern of tools than those in use in Paris. The hard stone and marble tools are similar in both countries, but the French soft stone tools would be thought useless in England. The block of stone is chopped with axes as near to the size required as can be safely done, and the carving is produced with wooden-handled tools and iron hammers. the English pattern of wooden mallet and mallet-headed tools being unknown. It is then scraped over with tools known in England as scrapers, and finally finished with a variety of rasps called "rifflers," or "riffleur rapes." These rifflers are, though seldom required, unobtainable in England of native make comparable with the French, being generally so badly shaped as to be almost useless, and this applies not only to the riffler rasps as made for soft stone, but to the riffler files as made for marble, a foreign variety known as Roman rasps being far superior.—*The Architect, London.*

The Comino Tree of Colombia.

L. S. Maria, United States consul at Medellin, Colombia, reports as follows:

This tree, called "Comino," produces an excellent wood for the use of cabinet makers, and possesses some exceptional properties, not only for high class furniture, but for building purposes. The common kind of comino is very much appreciated for house building, its merit being that it is a perfect proof against all wood-destroying insects, so prevalent in this part of Colombia. It is a well-known fact that all kinds of timber used for building purposes in this country are assailed and destroyed within a short space of time by insects called "Comejen," a winged insect; and a house built of common timber is fought shy of by all purchasers of property, whereas property built of comino timber will stand strong and unchanged for ages, and is unaffected by either insects, water, soil, or climate.

There is another kind of comino wood, having the same properties as above described, but commanding a very high price and used mostly for veneering purposes. It is of a beautiful dark and light undulating color of a yellowish tortoise shell appearance, as will be seen by the small box I send with the seed. High class furniture veneered with this kind of comino, called here "Comino crespo," presents a magnificent appearance, always bringing a high price, if well worked and properly finished.

This tree is especially grown in the department of Antioquia. It can be successfully cultivated at a temperature of between 18° and 20° C. I have no doubt it can be cultivated and acclimatized in the United States, and will be an important acquisition to the American wood workers.

How the Mind is Affected by the Weather.

The psychology of the weather is suggested by Dr. T. D. Crothers as a promising subject for study. He says, in *Science:* "Very few persons recognize the sources of error that come directly from atmospheric conditions on experimenters and observers and others. In my own case I have been amazed at the faulty deductions and misconceptions which were made in damp, foggy weather, or on days in which the air was charged with electricity and thunder storms were impending. What seemed clear to me at these times appeared later to be filled with error. An actuary in a large insurance company is obliged to stop work at such times, finding that he makes so many mistakes which he is only conscious of later that his work is useless. In a large factory from ten to twenty per cent less work is brought out on damp days and days of threatening storm. The superintendent, in receiving orders to be delivered at a certain time, takes this factor into calculation. There is a theory among many persons in the fire insurance business that in states of depressing atmosphere greater carelessness exists and more fires follow. Engineers of railway locomotives have some curious theories of trouble, accidents and increased dangers in such periods, attributing them to the machinery."

Dr. Crothers adds that the conviction prevails among many active brain workers in his circle that some very powerful forces coming from what is popularly called the weather control the work and the success of each one.

New Research Laboratory.

The Royal Institution, London, is the recipient of a munificent gift from Mr. Ludwig Mond, who has purchased a large freehold house adjoining the present premises of the Institution, and has made arrangements for its conversion into a completely equipped physico-chemical research laboratory, which is to be presented to the Royal Institution. Mr. Mond has also provided funds for the maintenance of this building and for paying the salaries and incidental expenses of the scientific staff, under whose control it will be placed. The laboratory will be free to all persons, without distinction of sex or nationality, who may desire to work there, and at the same time are, in the opinion of the committee of management, qualified to undertake original scientific work. Mr. Mond has suggested that the laboratory be known as the Davy-Faraday Research Laboratory, after the two great Englishmen who made the name of the Institution famous throughout the world. We suggest that the words "The Mond" be prefixed to the above title, so it will read "The Mond-Davy-Faraday Research Laboratory."