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DEFENSELESS CONDITION OF OUR SEAPORTS.

The need of fast war vessels was well illustrated by the recent incident in the harbor of San Diego, when a Chilean cruiser belonging to the insurgents entered the bay, anchored, took on board recruits, supplies of provisions, ammunition, and then sailed away. This ship, under the laws of nations, was in fact a piratical vessel, and as such was seized by the government authorities at San Diego, and a United States marshal placed on board in possession. But the Chilean rebels paid no attention to the laws of the United States; they may be said to have captured the place. When they had obtained all the supplies they wanted to assist them in carrying on war against a friendly nation, they upheaved anchor and steamed away, carrying off as a prisoner the official representative of the great republic. This was a small ship called the Itata, carrying four guns.

Report has it that the government is mildly indignant at this occurrence, and has ordered the United States war ship Charleston, at San Francisco, to sail in pursuit of the Itata and recapture her if possible. Allowing this could be done, and the Itata could be destroyed, it might be dangerous to attempt it. The Chilean rebels would be maddened and might retaliate. There is nothing to prevent them from sending in other boats to capture or bombard San Diego or other towns along the coast. Indeed, while the Itata was taking on supplies at San Diego, other vessels of the rebels were hovering outside the harbor.

We have no navy worthy of the name, and nearly all our seaports are without proper defenses. Like San Diego, they are at the mercy of any single piratical boat that chooses to enter. This is a very humiliating position for a country like ours to be placed in. The indifference of Congressmen to the naval defense of the country is astounding. They waste their time over party squabbles, vote billions of money for schemes intended to help bring votes to their respective sides on election day; but as to the immediate creation of an enterprising, prompt and effective navy, which is of vast importance to the country, but little is done, and that little very slowly. All told, we have a pair of small torpedo boats, half a dozen or so of small cruisers, and an equal number of larger vessels.

There should be fifty ships where now there is one. Every harbor in the country should be guarded by efficient sentinels consisting of vessels of high speed, ready for instant action, to maintain and enforce the authority of the republic.

CHARLES PRATT.

On the evening of May 4, Charles Pratt, eminent as a philanthropist of the best type, died from a sudden attack of heart disease. While much that he did in the endowment and support of institutions is known and has made him famous as one of the world's benefactors, a great deal of the good he performed was known to few besides himself. Thus it is said that his last business transaction before he died was the signing of a check, as a donation to the Brooklyn Board of Charities.

He was born in Wilbraham, Mass., October 2, 1830. At the age of 19 he engaged in the paint and oil business, beginning at the foot of the ladder. As one of ten children he was obliged to work for his own support, and succeeded so well that in 1857 he was able to come to this city and start as a member of the firm of Devoe, Reynolds & Pratt. This firm dealt in paints and oils. Soon afterward Mr. Pratt started on his own account in the refining of petroleum. His brand of kerosene, known as astral oil, is known everywhere. Later his firm was absorbed by the Standard Oil Company. Of the latter corporation Mr. Pratt was a leading member up to the day of his death.

His great wealth was devoted largely to the cause of education. The Adelphi Academy, of Brooklyn, N. Y., practically owns him as its father. He found it a private school, and by his donations, and advice and direction, brought it up to the standard of a high grade incorporated literary and scientific college. His donations to this cause exceed a quarter of a million of dollars. A few years ago the Pratt Institute, of Brooklyn, for manual training and scientific instruction generally, was opened to the public. This was entirely his creation. It is familiar to our readers, having been illustrated in this paper. Upon the Pratt Institute over one million of dollars was spent by its founder. Large additions to the Institute were contemplated, which it is to be hoped may yet be carried out.

Upon the principle of the Peabody buildings in London, Mr. Pratt established a large flat house in the Greenpoint district of Brooklyn. It is 200 by 135 feet in size and contains 120 suites of rooms upon its six floors. The building affords homes at moderate cost. It contains a reading room and library for the use of the occupants. The income derived from it was devoted to the maintenance of the Pratt Institute.

What other plans Mr. Pratt had in view for the future is uncertain. The work of his life is of double importance. It has brought about abiding and permanent good and has set a noble example for others to follow.

DR. EDWARD MAYNARD.

Dr. Edward Maynard died on May 3, aged 78 years. A dental surgeon by profession, he won a high standing among his co-practitioners. Some of his work is to-day a standard, and he introduced several new operations in dentistry. Originally a candidate for the West Point United States Military Academy, his delicate health prevented his completing the course. This episode presumably turned his mind to arms, and his reputation as an inventor of fire-arms became widely spread. In 1845 he patented the tape system of primers to take the place of the ever-troublesome percussion cap, an immense advance over the old system. In 1851 he invented the breech-loading rifle that bears his name, subsequently improved and patented at various dates, and forming one of the basic improvements in the development of the metallic cartridge breech-loader of to-day.

One interesting invention was for application to double-barreled guns, allowing each barrel to expand or contract independently of the other, thus preventing the expansion of one barrel when fired or when exposed to the sun from warping the other. As late as 1886 he patented an indicator for magazine rifles, to show at a glance the number of cartridges they contain.

Many other inventions in ammunition and fire-arms were made by him. He presented the interesting example of a man winning high eminence in two widely different fields of work. Various honors were offered him by foreign potentates. The Emperor of Russia, Nicolas I., appointed him court dentist. In the other field of work he was honored by the Kings of Belgium, Sweden and Prussia. He occupied the chair of theory and practice in the Baltimore College of Dental Surgery, and also in the dental department of the National University, Washington, D. C.

The Fur Seals in Behring Sea.

Every spring the seals appear in droves from their unknown winter quarters, and settle down on the Pribilof Islands, some 200 miles away from the mainland of Alaska. The males come first, accompanied by the young seal pups born during the previous summer, and choose their respective homes on the rocks. The females follow three weeks later—week little creatures, in steel gray garb, very different from the big brown male seals, with their fighting propensities. Often one seal possesses twenty wives, and he has hard task to defend his home and family from his neighbors. Indeed, the old seals fight like furies, becoming covered with scars and terrible wounds, and sometimes losing an eye or part of a flipper in the fray. Most of the fighting is done with the mouth. The combatants approach each other with averted heads and sly looks, till suddenly they utter a shrill piping whistle, and engage with their sharp canine teeth, the hair flies and the blood flows amid much furious bellowing. The young bachelors—from one to five years old—herd together in their own quarters at a respectful distance, till they are strong enough to fight for wife and home.

A Deep Well.

Some time ago the Wheeling Development Company began drilling a well near Wheeling, W. Va., in search of petroleum or natural gas. The hole has now reached a depth of 4,100 feet. In this distance several veins of coal have been passed, and both oil and gas have been struck, but not in paying quantities. The hole is 8 inches in diameter. It is reported that Professor White, State geologist of West Virginia, has succeeded in interesting the officers of the United States Geological Survey in the exploration, and that the hole is to be continued to a depth of 1,000 feet more, or as far as is practicable, with the idea of making investigations of temperature and magnetic conditions.

Trade Mark—Generic Name.

The Supreme Court of Illinois held, in the case of Bolander vs. Peterson, that a generic name, or one merely descriptive of the article made or sold, or its qualities, ingredients or characteristics, and which may be employed truthfully by other makers or dealers is not entitled to protection as a trade mark, and that words designating a trade indicating that a particular class of goods is dealt in cannot be exclusively appropriated by one as a trade mark or trade name. In this case it was held that the words "Swedish snuff store," or "magazine," could not be protected.

Spectacle Lenses in Photography.

Mr. Lyonel Clark says fair results can be obtained by fixing two meniscus spectacle lenses in a tube, with their concave sides facing each other, and with a suitable diaphragm between them. His general conclusion was that they would not work well enough to cause photographic opticians to put up their shutters, but would do a certain amount of useful work, especially in the hands of those photographers who, on æsthetic grounds, do not like prints sharp all over.

**Early History of the Discovery and Use of Tin.**

A very interesting work is that of Philip William Flower, written and published in England, and entitled "A History of the Trade in Tin; a Short Description of Tin Mining and Metallurgy; a History of the Origin and Progress of the Tin Plate Trade, and a Description of the Ancient and Modern Processes of Manufacturing Tin Plates." It is a somewhat rare work in this country, says the *Boston Herald*.

In the search for information through the archives of the world as to the origin and first employment of tin, Mr. Flower tells us that shortly after the description of the flood will be found a reference to Tubal Cain, "an instructor of every artificer in brass." The notice in Genesis thus fixes the discovery and use of tin and copper, according to the Bible, at between 4004 and 1635 years before the Christian era. And not only were the existence and use of these metals known, but the art of converting them was soon far advanced, for we find in the Book of Kings, written 1015 B. C., "King Solomon sent and fetched Hiram out of Tyre. He was a widow's son of the tribe of Naphtali, and his father was a man of Tyre, a worker in brass, and he was filled with wisdom and understanding and cunning to work all works in brass."

Any one doubting the nature of this metal can be reassured by reference to the chapter which follows, giving in detail a most elaborate schedule of the pillars, the chapiters, the baths, the lavers, the pots, the shovels, and the basins, some of cast and some of wrought bright brass, which Hiram the artificer prepared for the temple of King Solomon. Further ample evidence as to the early use of tin and brass is to be found in the Iliad of Homer, written, as it is believed, between the years 962 and 915 B. C.

We find, then, that brass—and consequently tin—existed in Tyre, the great seaport town of the Phœnicians, on the coast of Syria, about 1000 B. C. They are frequently referred to in all works relating to tin or to Cornwall. The Phœnicians were merchants, and carried on an important trade from the ports of Tyre and Sidon. These cities rivaled each other in magnitude, fame, and antiquity. The Tyrians excelled all other nations in the manufacture of a purple dye, said to have been extracted from a shellfish found on their coast. It is now well known that tin dissolved in muriatic acid produces a brilliant purple dye, and that tin dissolved in nitric acid will produce a scarlet dye. It is not unreasonable, therefore, to suppose that the use of tin in dyeing had much to do in the production of the Tyrian purple of the Phœnicians.

It is impossible to fix the date at which the export trade in tin was commenced from the British Islands, but it is certain that it existed and was controlled by the Phœnicians when Herodotus wrote his history, 450 B. C. Herodotus refers to the Cassiterides (the Scilly Islands) as the places whence they were then obtaining their supplies; but neither he nor any other historian has left us any information as to when that trade commenced. The Phœnicians called this land of tin "Baratanac," and Bochart and other historians attribute the very origin of the name of Britain to this work.

After the Phœnicians the trade in tin with the Cassiterides was taken up by the Greeks sailing out of Marseilles, the city of Massila, which was built by a colony of Greeks 600 B. C. The Phœnicians probably sailed straight across from their colony of Gades or Cadiz, and returned direct to that port with their valuable cargoes. The Greeks, however, appear to have been accustomed to coast up the English Channel, and crossing over from Kent to France, the tin was conveyed overland on horseback in thirty days to the mouth of the River Rhone.

The Romans, who had always been large purchasers of tin, were the next to follow the Phœnicians and Greeks. The following anecdote is derived from Strabo, who also tells of the conquest of Britain by Cæsar: "Formerly," he says, "the Phœnicians alone carried on this traffic (in tin) from Gades, concealing the passage from every one, and when the Romans followed a certain shipmaster, that they also might find the market, the shipmaster of jealousy purposely ran his vessel upon a shoal, leading on those who followed him into the same destructive disaster. He himself escaped by means of a fragment of the ship, and received from the state the value of the cargo he had lost. The Romans, nevertheless, by frequent efforts, discovered the passage."

As soon as the Romans made a conquest of Britain they formed in the tin province camps and roads (still visible) and left behind them vases, urns, sepulchers, and money that exhibit daily proofs of their having been a stationary people in these parts, and that Dannonium extended even to the Polerian promontory or the Land's End, limited by the western parts of Somersetshire. The Romans, as is well known, occupied Britain from B. C. 55 to A. D. 409, or 464 years, during which period the Cornish tin mines were largely worked by the ancient Britains, possibly for their own advantage, but more probably as serfs, and in A. D. 409 the Romans had to give way to the Saxons.

During the Saxon dominion (from 410 to 1066) the

mines were almost entirely neglected, frequent intestine commotions, and the subsequent wars with the Danes, allowing no time for such innocent and peaceful pursuits. In the year 1066 the Saxons in their turn were pushed aside by the Normans, and subsequently the tin mines in Cornwall were again vigorously developed. The Norman sovereigns derived immense revenues from the export of this metal, and, in the year 1198, when the country was almost ruined by the Crusades, Richard Cœur de Leon, then abroad, placed the management of the mines in the hands of the Archbishop of Canterbury, who, from this and other sources, was enabled to collect and remit to his employer a sum of money exceeding £1,000,000 sterling.

In the reign of King John (1199-1216) the produce was so inconsiderable that the rent of the tin farm amounted to no more than 100 marks. At this time the Jews were sole managers, if not proprietors, of the mines. The right of working the mines was then wholly possessed by the king, who, being sensible of the languishing state of the manufacture, bestowed some valuable privileges on the country by relieving it from the operation of the arbitrary forest laws, and granting a charter to the tanners.

Tin mines were known to exist in Spain, but the constant invasions of the Moors caused the mines to be abandoned or neglected.

In the year 1240 tin was discovered in the mountains of Bohemia by a Cornish tin man who had been banished from his native country, either on account of his religion or because he had committed murder. Further discoveries followed at Altenburg, in Saxony, 1458, and in Barbary, 1640.

Richard, Duke of Cornwall, brother of Henry III., 1216-1272, derived immense profits from the mines, the produce of which was subject at this period to a royalty of 40 shillings for every £1,000 in value, payable to the duke, and twice a year all the tin produced had to be brought to appointed places, where it was officially stamped and weighed.

The Jews being banished the kingdom in the eighteenth year of Edward I., 1290, the mines were again neglected till the gentlemen of Blackmoor (lords of the seven best tithings stored with tin) obtained a charter from Edward, Earl of Cornwall, with more explicit grants, privileges, etc., among them that of receiving as their own due and property the toll tin, that is 1-15th of all the tin raised. The kings and dukes of these times would appear to have treated this industry very lightly, for it is recorded that Edward I., in 1305, in the thirty-second year of his reign and the 36th of his age, mortgaged or assigned his due for one year to settle a wine bill for £750.

In 1376 the tanners were able to obtain protection by act of Parliament, but the civil wars following (viz., the Wars of the Roses) the mines were again very much neglected. When, in 1485, these wars ceased, England became more settled and tin mining became more profitable and prosperous. Prudent Queen Elizabeth (1558-1603) appears to have taken more interest in the mines than her predecessors, for she sent to Germany and brought over German miners, by whom many of the Cornish processes were very much improved.

Very little has been written, and next to nothing can be ascertained, of the progress of this trade from 1600 to 1700. In the reign of Queen Anne (1702-1714) it is recorded that the queen had in stock 5,000 tons of tin, equal to five years' consumption, demonstrating the existence of hard times for the producers, or proving that the queen was a "hard bargain" to deal with.

It was after the death of Queen Anne, but there appears to be no record of the exact date, when Eastern or foreign tin first arrived in Europe to compete with the Cornish product; but as early as 1760 small quantities of Banca tin were received in Holland. In 1787 the importation of Banca tin to Holland was so much beyond their own requirements that the Dutch shipped a quantity to England, but that same year the increase from the Cornish mines was about 500 tons. The market was, however, relieved by the East India Company taking 800 tons to China, where a market had already been opened for it. The trade with China, however, was brought to a close in 1817 by the return of Cornish tin from China to London, and the underselling of the mine product in the home market. The history of tin from that date to the present day is only a question of figures and statistics, which are beyond the scope of this article.

The discoveries of tin in Germany 500 years ago, which never became important, were practically abandoned several years since. Cornwall has safely defied all competition from Europe and the East, but the cloud which threatens her has risen in the south, in her own colonies. In the year 1872 large discoveries of surface tin ore were made in Queensland and New South Wales, and all at once a new supply appeared to find a sale in Europe.

**THE GERMAN NAVY.**—Eleven line-of-battle ships, with an aggregate displacement of 70,000 tons, are now being built for the German government, viz., three at Bremen, two at Gaarden, near Kiel, one at Wilhelms-hafen, three at Dantzig, two at Bradow, near Stettin.

**How to Preserve Health.**

One of the best ways to keep in good health, says the *Monthly Bulletin*, is not to think or worry too much about it. If you feel strong and well, don't imagine that some insidious disease may be secretly attacking your constitution. Many people are like the inexperienced traveler, who anxiously inquired about the symptoms of seasickness, and how he should know when he had it. One generally knows when he is sick, and frequently many supposedly alarming symptoms prove, upon investigation, to be either perfectly natural occurrences or of very slight importance.

Eat and drink what you desire, as long as it agrees with you. Your stomach knows pretty well what it can digest. Plain, simple food is desirable, as a general thing, but the luxuries of the table, in moderation, will do no harm.

Alcoholic beverages are not fit for habitual use. They are true medicines, and should only be used like any other medicines—under the advice of a physician. As a regular beverage they can do no good, but will almost certainly do harm.

Take all the sleep you can get, but remember that the necessary amount varies greatly for different persons. Some must sleep at least nine hours, while others thrive under six. Only don't rob yourself of what you really need. The "midnight oil" is a terribly expensive illuminant to burn either for purposes of labor or study.

Always treat a common cold with great respect. Ninety-nine times out of a hundred it will get well any way, but the hundredth cold, if neglected, may lead to bronchitis, pneumonia, or consumption. It is best to take no such chances.

If you are sick enough to need any medicine at all, beyond the simple remedies familiar to all, you are sick enough to need the attendance of a physician.

By all means take as much exercise as you can, and be in the open air as much as possible. Outdoor life is the natural condition of mankind, and the more one can have of it, the better. The practice must not be carried to extremes, however. There are many days when one is much better off in a warm, comfortable, well-ventilated house than trying to take outdoor exercise in a midwinter storm, or under a July sun, and no one ever strengthened his constitution by sleeping with his bed-room window open with the outside temperature at zero, or allowing the snow to drift in upon his pillow.

Fresh air, sunlight, good and sufficient food, pure water, outdoor exercise, temperance in all things, and a cheerful disposition, are the chief remedies in nature's dispensary, and are worth more than all the drugs and medicines of the shops. Dr. Holmes has truly said that if nine-tenths of all the medicines, patent, proprietary and otherwise, in the world were poured into the ocean, it would be all the better for mankind and all the worse for the fishes; and the best physician can do little without good nursing, and thus aid nature in throwing off disease.

**A Remarkable Run of Iron.**

The *Mancelona (Mich.) Herald* says: Stack No. 2, blast No. 1, of the Antrim Iron Furnace, completed the third year of its present blast April 15. Number of days in blast, 1,050, and the total product during that time amounted to 66,347 tons of pig iron—a daily average of 63½ tons. A trifle over a year and a half of this run, or, to be exact, 582 days of it, the stack was blown with a small Weimer engine, with a product of 32,326 tons—a daily average of 55½ tons. The balance of the run (468 days) was made with a large engine of the same make, during which time the product amounted to 34,021 tons—a daily average of 72¾ tons.

To make this amount of iron, 115,410 tons of ore was used and 146,000 cords of wood consumed. Had the stack been blown during the entire period with the large engine, the total product would, of course, have been much greater, but the record is a remarkable one, nevertheless, and it is believed that no charcoal stack in the United States has ever made so long a run or so large an amount of iron with a single lining.

**Outting Glass Tubes, Bottles, etc.**

Another method, by Prof. Wm. Thomson, consists in having some strips of thick blotting paper at hand from a quarter to half an inch in width, and of different lengths. Two pieces of such paper are wetted and wrapped round the bottle, tube, or other vessel to be cut, once or oftener (once is sufficient). These pieces of paper, cut true, are wrapped round the vessel like two hands. They must not be placed too closely together—say from a quarter to three-eighths of an inch apart for large vessels, and rather less than a quarter of an inch apart for tubes of an inch or so in diameter. When this is arranged a fine flame about two or three inches long is allowed to play on the glass between the two pieces of wet paper, the vessel being slowly revolved and the point of the flame kept between the two papers. Within a minute usually the vessel separates with a clean cut along the line against which the flame played.