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NEW YORK, SATURDAY, SEPTEMBER 23, 1899.

THE "OCEANIC."

The advent of the "Oceanic" to our port marks a new stage in the history of steamship construction. It introduces a true marine giant, as will be seen from the fact that the "Oceanic" is over fifty per cent larger than any of the huge vessels which have been launched in the past decade, and therefore constitutes in respect of size a class by herself. The largest vessel afloat, previously to the launch of the "Oceanic," was the "Kaiser Wilhelm der Grosse" of the North German Lloyd Company, whose full load displacement is 20,000 tons. The White Star liner, however, has been built to take advantage of the new 40-foot channels which are being dredged in New York Harbor, and on her full load draught of 35 feet 7 inches she will displace, according to the builders' calculations, 31,590 tons. It was stated by the officers of the ship that a cargo and passenger-carrying vessel of even larger dimensions, built on the lines of the "Cymric," is now under way at the Belfast yards. It is likely that the twentieth century will witness the construction of Atlantic liners whose mark will be set by this great ship of the year 1899. In view of the many contradictory statements as to the horse power and speed of the "Oceanic," we have ascertained from the officials directly concerned in her construction that on her trial trip she made 21.25 knots with an indicated horse power of 28,000 and a boiler pressure of 192 pounds to the square inch. For those of our readers who may not have an opportunity to see the "Oceanic," an excellent scale of measurement is afforded by the fact that from the top of her 19-foot smokestacks to the grate bars of the furnaces is 139 feet.

FINANCIAL PROBLEMS OF CUBA.

Figures just compiled by the War Department give a most encouraging tone to the financial problems of Cuba. Already, under the liberal and intelligent management of the United States government, the total income of the island, for the first six months of this year, exceeds all expenditures by the very handsome balance of \$1,480,021.92. No doubt, this news will greatly surprise very many, who have hardly looked for such a result from a purely army management of affairs; as too many are apt to imagine that laxity, extravagance, and an absence of business methods are characteristic of military methods. As a matter of fact, this idea is based on a great misconception of the truth. During the period named the total receipts were \$6,982,010.20, and the disbursements \$5,501,988.28. Of the latter sum \$1,712,014.20 was expended in sanitation, an outlay such as Cuba never dreamt of in Spanish days; \$505,263.06 in the erection or improvement of barracks and army quarters; \$443,563.19 in establishing and maintaining the rural guard of the island; \$250,674.12 on public works; \$293,881.27 for charities and hospitals; \$242,146.01 for civil government; \$723,281.38 in municipal management; \$88,944.03 in aid of quarantine affairs. When we consider that, notwithstanding the report for July shows an even greater proportionate saving, it has been possible thus far this year to expend nearly one-half the total in those things which make for greater physical and moral cleanliness, altruistic endeavors largely neglected hitherto in Cuba, this showing is especially gratifying to our national pride. It is easy, in view of these facts, to understand why British capital is pouring into Cuba for investment, assured as it is of a stable, honest, and far-seeing rule for that sadly abused island.

MONEY SPENT BY TRAVELERS.

Few have any conception of the enormous outgo of money earned in this country and spent by our leisure and traveling classes in Europe each year. It is now proposed, according to a chief of one of the Treasury bureaus, in Washington, to compile an accurate set of statistics upon this subject. Several years ago such an effort was made, but it was not carried out as thoroughly as it should have been. Even then, however, the total ran up to over \$230,000,000 before the work

was abandoned. It is promised now that the forthcoming investigation will be very thorough, including as it will data from steamships, railroads, custom houses, consular estimates, reports of special foreign agents, etc. Such statistics cannot fail to have great interest and value to students of political economy and, especially, to all interested in the problems of the distribution of taxation.

DANGER IN THE APPROACHES TO THE BROOKLYN NAVY YARD.

The disastrous grounding of the "Massachusetts" and the "Brooklyn," both of which occurred during the past twelve months, have drawn attention to the fact that a visit on the part of any of the deep draught vessels of the navy to the Brooklyn navy yard is fraught with positive danger, particularly at certain stages of the tide. In the case of the "Massachusetts," the existence of the shoal off Governor's Island was well known to the authorities, but the accident to the "Brooklyn" was in the nature of a surprise, for it was supposed that there was ample depth of water at the spot where she was supposed to have touched bottom. In the course of a survey made by the Coast and Geodetic Survey boat "Eagle," it has been found that the obstruction consisted of a sunken barge that lay about 200 yards out from the Hamilton Ferry slip in 30 feet of water.

It appears that this is not the spot on which the barge was sunk, the wreck having been carried there by the powerful tidal currents that sweep through the channels in this vicinity; and it is this very liability of a sunken and semi-buoyant wreck to be shifted that renders it such a menace to the safety of vessels of the deep draught of our battleships and larger cruisers. The War Department cannot do a greater service to the sister arm of the service than by making a thorough survey of the approaches to the Brooklyn navy yard and presenting a comprehensive scheme for clearing the channels and deepening them to an extent that will allow our battleships to leave and enter the yard at any state of the tide. Our two latest battleships are about to pass through these channels to prepare for their trial trips, and it would be a humiliating mortification if they should open their careers with accidents which are of such a nature that they might easily become disasters.

NEW WAYS OF USING THE BIG CORN CROP.

The corn carnival is the feature of the great valleys of the Central West "when the frost is on the pumpkin and the corn is in the shock," but with a crop of some 300,000,000 bushels to harvest there are tired souls and wearied bodies in the corn belt these fine autumn days. The promise of wealth and abundance of this world's goods brings consolation and joy; it is the prolonged labor without the monetary compensation that disheartens and dispirits. Never was there a more propitious corn carnival season than the present, and Kansas and the corn belt are jubilant. Crops are good, and prices are good. Corn is everywhere and everything. One cannot walk the streets of a Kansas town to-day without encountering witnesses of the State's wealth. There are corn neckties in the show-windows, corn-husk parasols and hats in the possession of fair women pedestrians, cornstalk canes jauntily swung by prosperous swains, and corn shoes and dolls for children everywhere. The manifold value of corn for household and personal adornment has been the feature of each succeeding carnival, and this year's creations have totally eclipsed anything heretofore witnessed.

But while the carnival emphasizes the ornamental side, there is an undercurrent of seriousness about this adaptation of corn and its by-products that more deeply concerns the people than an outsider might imagine. Corn was never used in so many different ways for commercial and manufacturing purposes as in the past year or two. If we cannot induce the Europeans to take our corn for household uses, we can manufacture it into different articles of commercial value which they must take. This seems to be the trend of thought in the corn belt, and new inventions and discoveries annually open up new consumptive markets for corn and its products. Corn is gradually entering into industries that seem far removed in every sense from this product of the fields. The queer corn shoes, corn hats, dolls, and neckties which were made and exhibited for celebrating the corn carnival stand in sharp contrast with the corn oil, corn cakes, and corn rubber.

The one hundred and twenty-odd recipes for using corn as an article of food, which government experts published ten years ago for the benefit of benighted Europeans who did not appreciate this article of food, are not so important in increasing the consumptive demand as some of the recent discoveries. Corn oil for instance, which is extracted from the grain, has an extensive demand in various trades where vegetable oils are essential. Corn oil can be produced more cheaply than most of our vegetable oils because of the relative abundance of corn, and in the last year much of the

oil has been used for table purposes. No attempt has been made to substitute for good olive oil, but judiciously mixed it will pass muster as a low grade table oil. It is also a fair lubricating oil; but its largest use is in the trades and manufactures. Paint mixers employ it quite generally, and also manufacturers of fiber and shade cloth. It possesses qualities that recommend it particularly to these industries, and the demand for it is annually increasing.

Corn rubber is a new article which is substituted for pure rubber in certain lines of goods. This cheap substitute is mixed with equal parts of pure Para rubber. The corn part of the substitute is taken from the refuse of the glucose factory. About five per cent of the corn in making glucose could not formerly be utilized, and this waste seemed absolute. The new corn rubber is manufactured from this apparent waste, and when mixed with pure rubber it produces an especially valuable compound. Improvements in this rubber substitute are made each year, and it has to a certain extent supplanted Para rubber for many purposes. This imitation rubber is from 25 to 50 per cent cheaper than pure rubber, but it has not been sufficiently perfected entirely to displace the Para article. The oil which is found in corn gives a pliability to the rubber compound that prevents it from cracking and breaking as most cheap grades of rubber do. Moreover, the oil of corn tends to prevent the rubber from oxidizing, a fault common to most India rubber.

There are five refineries of corn oil in the United States which use between 10,000,000 and 20,000,000 bushels of corn and corn waste. Besides the output of oil, the refineries have made nearly thirty other different products from the corn. But in spite of all these various products about 5 per cent was practically waste until the discovery of the rubber substitute was made. The spirits distilled from corn constitute another large industry, and recently the employment of the spirits in the manufacture of new grades of smokeless powder has greatly increased the demand for corn. The British government has been a liberal buyer of the spirits for this purpose, and the Japanese government has quite recently placed an order for several thousand barrels for the same purpose. An extensive European war would consequently send the price of corn "booming," because of its general need for food and because it would be in demand for the manufacture of large quantities of smokeless powder. The distilling companies are not only increasing in number, but the output of the largest is doubling. They absorb an enormous quantity of the farmer's corn and prevent a surplus that might otherwise reduce prices below the point of profit for the growers.

The comparatively new cattle foods owe their existence to the employment of corn in various manufacturing purposes. All of them have received scientific tests and the indorsement of experts in cattle feeding. The corn oil cake, which is really the refuse of factories, contains nutriment of a high order, and when properly fed, in conjunction with other foods, it is of great value to the animals and money in the pocket of the farmer. Gluten meal, gluten feed, and chop feed are other cattle foods that owe their origin to the different factories employed in converting corn into products of commercial and scientific use.

The manufacture of glucose has opened up a whole field of new industries, and the glucose made from corn enters quite extensively into the refining of syrups, jellies, and fruit preserves. It is also used by leather tanners and brewers. The sugar and starch made from corn form other branches of important industries. Different grades of grape sugar are made from the corn, and they are used by ale brewers and tanners, while the better grades are employed by apothecaries and confectioners. Pearl and powdered starch come from the corn, and also dextrin and flourin. The former is employed in the manufacture of mucilage and glue, and the latter is mixed with flour. The new uses to which these by-products of corn are put multiply rapidly, and every new employment of any of them makes a greater demand upon the corn crop. It is all along this line that improvements are being made which encourage the corn farmers and improve the future for them. If it were not for these several dozen different articles which are made from corn, the farmers of the corn belt would long since have been ruined. A crop of 300,000,000 bushels would simply swamp them, and make corn so cheap that it would not pay to harvest it. But with this enormous crop in view, the farmers are happy and jubilant, because there is sufficient demand for the product to keep the prices up.

WIRELESS TELEGRAPHY TO REPORT THE YACHT RACES.

The New York Herald has made arrangements for the exclusive use of the Marconi system of wireless telegraphy for reporting America's cup races off Sandv Hook. Signor Marconi and four assistants have sailed from Liverpool with all the necessary instruments for use in reporting the races, and the work will be done under the personal supervision of Marconi and his assistants, who have been engaged in experiments on

the transmission of wireless dispatches across the British Channel during the last six months.

The instruments will be placed on the "Grande Duchesse," of the Plant line, upon the upper deck of which a tall pole, extending 60 feet in the air above the water line, will be placed, and a running account of the races will be telegraphed by Marconi and his assistants. On board the cable ship anchored near Scotland light a similar pole will be erected, and here two expert operators will be stationed to receive the message after it has been transmitted from the "Grande Duchesse." From the cable ship the message will be transmitted by means of submarine and land wires. The steamer "Ponce" will also be equipped with wireless telegraphy apparatus, the system of Mr. W. J. Clarke being used.

Rear-Admiral Bradford, Chief of the Bureau of Equipment of the Navy Department, has been informed that Signor Marconi will go to Washington to discuss with him the proposed experiments with wireless telegraphy. Admiral Bradford will recommend that one of the vessels of the navy be set aside for experimental work. It is proposed to place the receiver on shore, and the warship will communicate with it from varying distances. By this means it is believed the system will be developed and the value of it will be definitely determined.

SOME CALENDARIAL FACTS ABOUT THE TWENTIETH CENTURY.

When will the twentieth century begin? Why there should be different answers to this question is a little puzzling to know. A few fundamental facts disposed of, ought easily to settle the controversy. Of course, the first century began with the year 1, and closed with the year 100. The second century, then, began with the year 101, and closed with the year 200. Now, following this method to the present time, there can be but one answer to the above question. The nineteenth century closes with the year 1900, and the year 1900 closes December 31. Immediately after midnight, therefore, of December 31, 1900, is when the twentieth century begins. In other words, it begins with the first second of the first hour of the first day of January, 1901.

Just at the very nick of time when the twentieth century begins at the international date line, the nineteenth will still be enveloping, as it were, the entire globe; but twelve hours afterward, it will be the twentieth century on half the earth and the nineteenth on the other half; twelve hours later the nineteenth will have entirely passed, and the twentieth will have made its first circuit round this ball on which we live. Thus it takes a century a full day's time to get complete possession of affairs, and from the time of its very beginning to the point where its last trace disappears occupies just 100 years and 1 day. This is evident from the fact that after a new century has begun on the earth, it still takes the preceding century full twenty-four hours to give way entirely to the new.

The twentieth century will open on Tuesday and close on Sunday. It will have the greatest number of leap years possible for a century—twenty-four. The year 1904 will be the first one, then every fourth year after that to and including the year 2000. February will three times have five Sundays; in 1920, 1948 and 1976. In 1901, Decoration Day, Fourth of July and Thanksgiving Day will occur the same day in the week. Then, after that, the same thing will happen at the following intervals: 6, 11, 11, 6, 11, 11, and so on, years; or in 1907, 1918, 1929, 1935, and so on. In the years 1912, 1940, 1969 and 1996, there are four holidays that will fall on the same day in the week: the three already mentioned and Washington's Birthday Anniversary, as also the 29th of February. Thanksgiving Day and Christmas will occur on the same day in the week in 1906, and then at successive intervals of 11, 6, 11, 11, 6, 11 years, and so on; also in 1928, 1956 and 1984. March 4 will fall on Sunday in the inaugural years 1917, 1945, and 1973.

The same yearly calendar that was used in 1895 can be used again in 1901, after which, at successive intervals of 6, 11, 11 years throughout the century; that for 1890 again in 1902 and at intervals of 11, 6, 11 years; 1891, again in 1903 and at intervals of 11, 11, 6 years; 1892, in 1904 and at intervals of 28 years; 1899, in 1905 and at intervals of 6, 11, 11 years; 1894, in 1906 and at intervals of 11, 6, 11 years; 1896, in 1908 and every 28th year thereafter; 1897, in 1909, and at intervals of 6, 11, 11 years; 1898, in 1910, and at intervals of 11, 6, 11 years; 1872, in 1912 and every 28th year thereafter; 1876, in 1916; 1880, in 1920; 1884, in 1924; 1888, in 1928; in the last four cases, also at intervals of 28 years.

The following are, in order, beginning with 1901, the dates of Easter for the first 25 years of the century; April 7, March 30, April 12, 3, 23, 15, March 31, April 19, 11, March 27, April 16, 7, March 23, April 12, 4, 23, 8, March 31, April 20, 4, March 27, April 16, 1, 20, 12.

The earliest possible date on which Easter can occur is March 22. The last time it occurred on this date was in 1818, but it will not occur again till after the twentieth century. The latest Easter can occur is April 25, and it will thus occur but once in the coming century, in 1943. Whenever Easter occurs on March 27, or April 3,

10, 17, or 24, Christmas also occurs on Sunday. Though one of the objects aimed at by the church authorities who fixed upon the method of determining the date of Easter was to prevent its occurrence on the same day as the Jewish Passover, nevertheless the two events will occur together four times in the twentieth century, April 12, 1903, April 1, 1923, April 17, 1927, and April 19, 1981.

The twentieth century will contain 36,525 days, which lacks but one day of being exactly 5,218 weeks. The middle day of the century will be January 1, 1951. The day of the week that will not occur as often as each of the others is Monday. Fifteen out of the hundred years will begin on Wednesday and the same number on Friday. Fourteen will begin on each of the other days in the week.

The following is a special rule for finding the day in the week corresponding to any date of the twentieth century: Add together the number of the year of the century, one-fourth of one less than this number, neglecting fractions, and the number of the day in the year; increase this sum by 1, and then divide by 7. The remainder will indicate the number of the day in the week, Sunday being regarded as 1 and Saturday as 0. Thus in the case of July 4, 1980, we have as the number of the year of the century, 80; as one-fourth of one less than this number, 19; and as the number of the day in the year, 186, the year being a leap year. Hence, $80 + 19 + 186 + 1 = 286$, which divided by 7 gives 6 as a remainder. The day in the week is, therefore, Friday.

Several announcements are made of changes to be inaugurated with the opening of the new century. The first of importance is that Russia will adopt the Gregorian calendar. This will be done by omitting thirteen days, the amount of error that will have accumulated after the close of February, 1900. The Russians will then write January 1, 1901, instead of December 19, 1900, or rather instead of

December 19, 1900

January 1, 1901

 the dual

system now in vogue in that country and in Greece. The other important announcement is that it is not at all unlikely that the astronomical day, which now begins at noon of the civil day, will begin with the civil day, at midnight. The present method of having the astronomical day to begin twelve hours after the beginning of the civil day is apt to be confusing. On the other hand, to have the former begin at midnight, just when astronomers are often busiest, will be to them somewhat inconvenient.

As to eclipses in the coming century, there will be about 380 of them, the number of solar being to the number of lunar in about the ratio of 4 to 3. What is of very rare occurrence in a calendar year will happen in 1935, the first time since 1823, viz., seven eclipses, the largest possible number that can happen in a year. There are eight total solar eclipses predicted to occur, visible in the United States, in 1918, 1923, 1925, 1945, 1954, 1979, 1984, 1994. There will also occur twelve transits of Mercury on the following dates: November 12, 1907; November 6, 1914; May 7, 1924; November 8, 1927; May 10, 1937; November 12, 1940; November 13, 1953; November 6, 1960; May 9, 1970; November 9, 1973; November 12, 1986; November 14, 1999. The first, second, ninth and tenth will be wholly visible in the United States; the seventh and eighth only partially so. A transit of Venus, however, which is of much more consequence, will not occur within the next century. The earliest date predicted is June 8, 2004.

While it is claimed at least a thousand comets come within visible range of the earth within a century, there is reasonable certainty of the recurrence of but one extraordinarily conspicuous comet in the next century. That one is known as Halley's. It was last seen in 1835. It will be due again in 1910 or 1911; the exact time is not known, owing to slight modifications in its orbit due to planetary influence. It will probably recur again sometime near 1985. Of course, it is not impossible for some hitherto unobserved comet to appear in all its blazing glory at any time. No astronomer knows. Of famous meteoric showers there will probably be the three recurrences of the Leonids, in 1932, 1965, and 1998, as in the present century, one being yet due, November 13 of this year.

BENJAMIN F. YANNEY.

NEWS OF LIEUT. PEARY.

The Peary-Harmsworth steamer "Windward" has arrived at Brigus, Newfoundland, from Etah, North Greenland, and she will be followed by the "Diana" of the Arctic Club, in about a week. The two steamers met at Etah August 12, and worked in company under the direction of Lieut. Peary in collecting supplies for the winter and the equipment for next spring's campaign. Lieut. Peary and the sled parties were in the field almost continually from October, 1898, until August 6 of this year, and have effected an extraordinary amount of important work, adding much to the geographical knowledge of the coast line and to the interior of Ellesmere Land. The sledging journeys aggregated more than 1,500 miles. Lieut. Peary made a careful reconnoissance of the coast line southwest of Allman Bay, and carefully defined the lands between

that point and Cape Sabine. The "Windward" was icebound in Allman Bay on the west side of Kane Basin from August, 1898, to August 2, 1899. Lieut. Peary made several very successful hunting trips and in December he sledged 250 miles north to Fort Conger, the headquarters of the Greely expedition. He had the misfortune to have both his feet frostbitten, which caused six weeks' delay and confinement until he could make the return trip.

He was hauled all the way back to the "Windward" where several toes were amputated. This was followed by complete recovery, and he now walks as well as ever. Peary was the first to visit Fort Conger since Greely left it in 1883. He brought away and is sending home the original Greely records, the sextant of the Nares-Markham expedition of 1876-78, and many private letters and papers of members of the Greely party. The records can only be regarded as relics, as Gen. Greely had brought three copies of them to the United States. Lieut. Peary also conducted a reconnoissance beyond Fort Conger to Cape Beechey. Subsequently he made a second trip to Fort Conger, and four parties in all reached that point from the "Windward."

The winter is now settling down over his camp at Etah on the Greenland coast east of Smith Sound. It is a good place for a camp and is near the one where Dr. Hayes wintered in 1886. Peary has built a comfortable living and working room for himself and his companions, and during the winter he will collect more dogs for next season's campaign and prepare to resume his sledge work up the channels from Smith Sound as soon as the sun returns. The winter will be spent in rest and in working up the results of last year. The "Fram" wintered near Cocked Hat Island 10 miles west of Cape Sabine. She was released from the ice August 1, and reached Etah August 12, and left the same day for Cape Sabine. It is reported she will go to Jones Sound for the winter, unless she succeeds in getting beyond Kennedy Channel and landing Captain Sverdrup for a sledge trip across or around the northern end of Greenland, to be picked up on the east coast by the ship "Windward."

OBSERVATIONS OF POLARIS.

Prof. W. W. Campbell, on September 12, made the following statement in regard to his recent observations, by means of which he discovered that Polaris, familiarly known as the North Star, embraces three distinct bodies:

"The observations of Polaris," says The New York Times, "were made with the Mills spectroscope attached to the 36-inch telescope. From the well-known principle of the shifting of the line in the spectrum of a star, we can determine whether the star is approaching or receding from the observer and how rapidly. For most stars the velocity is constant. For some stars the velocity is variable, due to the attractions of companion stars.

"The recent observations of Polaris, at Lick Observatory, show that its velocity is variable. It is approaching the solar system now with a velocity of 8 kilometers per second. This will increase in two days to 14 kilometers, and in the next two days will decrease again to 8 kilometers. This cycle of change is repeated every four days. The bright Polaris, therefore, revolves about the center of gravity of itself and its invisible companion once in four days. The orbit is nearly circular and is comparable in size with the moon's orbit around the earth.

"This center of gravity, and therefore the binary system, is approaching the solar system at present with a velocity of 11½ kilometers per second. A few measures of the velocity of Polaris made here in 1896 gave its approach at the rate of 20 kilometers per second. Part of this change since 1896 could be due to a change in position of the orbit of the binary system, but most of it must have been produced by the attraction of a third body on the two bodies comprising the four-day system. The period of revolution of the binary system around the center of gravity of itself and the third body is not known, but is probably many years.

"Both companions of Polaris are invisible, but their presence is proved by disturbances which their attractions produce in the motion of the bright Polaris."

GOVERNMENT AID IN FORESTRY.

The Division of Forestry, of the United States Department of Agriculture, has issued a circular stating that the division is prepared, as far as a limited appropriation will permit, to render practical and personal assistance to farmers and others by co-operating with them to establish forest plantations, wood lots, shelter belts, and wind breaks. An expert tree planter will have charge of the work, and he will be assisted by collaborators from the different States who are familiar with local conditions. It is proposed that visits be made by the superintendent or one of his assistants to the lands of the farmers desiring aid in forestry, and that working plans be given, including help in the selection of trees, information about planting, and instruction in handling forest trees after they are planted.