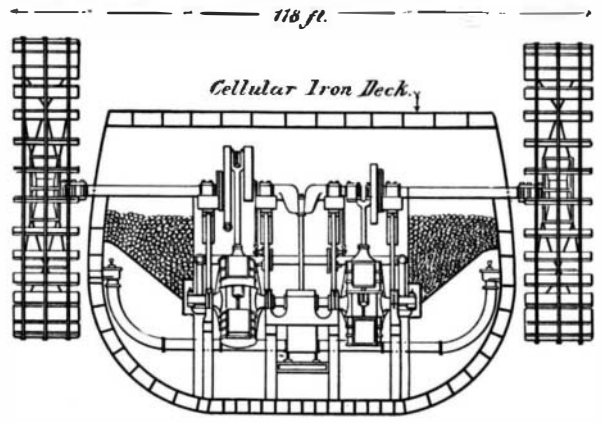
primitive these dwellings really are. The walls consist of rather slight posts set in the ground, closed in with the bark of the native trees, while the roof consist of light pole rafters with a thick covering of palm leaves. The inhabitants of these huts are employed chiefly on the farms and in the tobacco factories, where they do the common laboring, receiving for their services a wage which varies from 38 to 60 cents a day. These poorer classes live on dried codfish, sweet potatoes, rice, beans, bananas and coffee. It can easily be understood that the ravages of the hurricane were not so severely felt by these people as by the owners of the better class of houses; for the matter of repairing one of these huts is merely a question of a day or two.

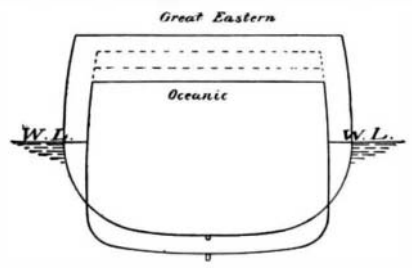
THE "GREAT EASTERN" AND THE "OCEANIC"—A COMPARISON.

With the arrival of the magnificent liner "Oceanic" of the White Star Line Company at this port after a successful maiden trip, the people of New York city are carried back to the time when, some forty years ago, that other mammoth steamship, the "Great Eastern," made her first trip across the Atlantic. Although the "Oceanic" is a first-class passenger steamship in every particular of the hull, engines, safety and accommodation, and represents in all these respects the highest development of the steamship builders' art, there is no question that it is in respect of her unprecedented size that she will command most attention. For this reason we have thought best to make this article a comparison of the "Oceanic" with the "Great Eastern," with a view to bringing out, incidentally, the great strides which have been made during the past forty years in the building of transatlantic liners.

To begin with the question of size, the "Oceanic" is longer over all by 12 feet and her displacement at a working draught of 32½ feet is greater by 1,500 tons. In beam and depth, however, the ship of the fifties was enormously larger, having a beam of 83 feet as against 68 feet for the "Oceanic," while her depth was 57½ feet as against 49 feet. These differences are shown very clearly in the sectional view of the two ships. At first sight it would naturally puzzle the reader to understand how the "Oceanic" with a cross section so much smaller could have a larger displacement than the "Great Eastern," when both ships are of approximately the same length; but it must be remembered that while the average draught of the "Great Eastern" was only 25½ feet, that of the "Oceanic" is 32½ feet. The fact that a larger proportion of the hull is above the water-line will also explain the more bulky appearance of the "Great Eastern" in our broadside view of the two vessels. Moreover, the model of the "Great Eastern" was considerably finer than that of the "Oceanic"; she did not maintain her full beam for any considerable distance amidships, her under-water body fining away toward the ends like that of a yacht. Further, her bilges were very much easier, being rounded up with a broad easy sweep, while those of the "Oceanic," as is the fashion in modern steamships of this class, are nearly square with a flat floor, a small dead rise, and a short radius at the turn.



CROSS SECTION OF "GREAT EASTERN" AT THE PADDLE ENGINES.

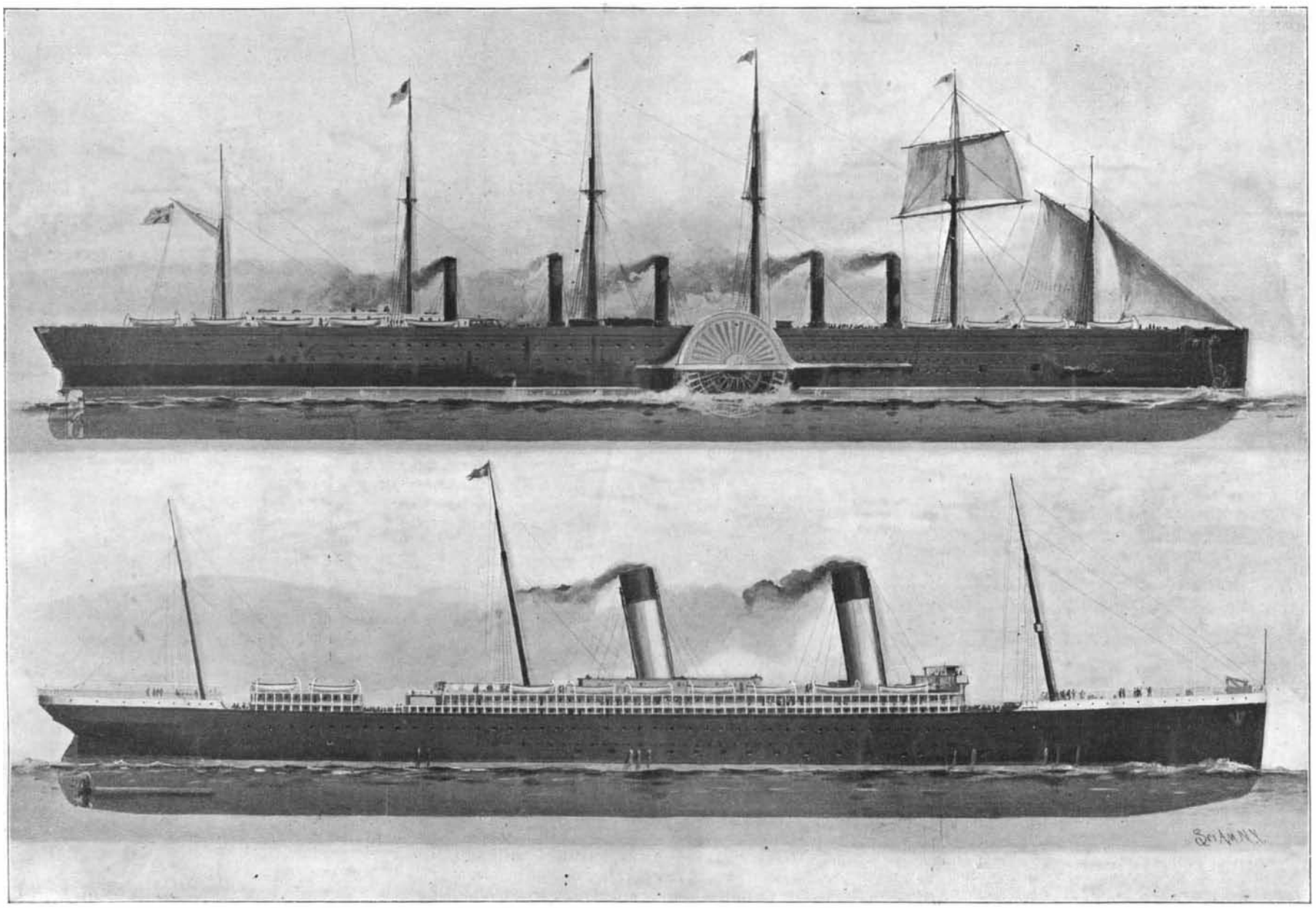


MIDSHIP SECTIONS OF "GREAT EASTERN" AND "OCEANIC."

Another feature which serves to make the "Great Eastern" look more bulky than the modern vessel is the fact that her plating was carried up to the top deck, which was entirely flush from stem to stern and carried only a few deck houses. In the "Oceanic," on the other hand, the two upper decks amidships are carried upon stanchions and extensions of the side frames and have no side plating.

THE "GREAT EASTERN."—The construction of the "Great Eastern" was commenced in the spring of 1854 on the banks of the Thames. She was built broadside on to the water, and the enormous difficulties attending her launch delayed her taking the water until the last day of January, 1858. Her total cost was probably about $4,400,000. She was propelled by two sets of engines. Amidships was a four-cylinder paddle wheel engine of huge dimensions, while astern of this was a horizontal four-cylinder single screw engine. The paddle wheels were enormous affairs, 56 feet in diameter, and each of them weighed over 90 tons, while the breadth of the ship over the paddle wheel boxes was 118 feet. Each of the paddle wheel engine cylinders was 6 feet in diameter by 14 feet stroke, and the indicated horse power was 3,500. The four cylinders of the single screw engine were 7 feet in diameter with a 4-foot stroke, the indicated horse power being 4,500. Steam was supplied by ten double-ended multi-tubular box boilers, which carried a working pressure of 20 pounds to the square inch. The total daily consumption of coal when the vessel was running at full speed was 400 tons. The bunkers had the enormous capacity of 12,000 tons, this large supply being provided with a view to enabling the vessel to steam out to Australia and back without recoaling. The hull was constructed of iron, and, considering the early date at which it was built, it was a masterpiece of construction, and was of a strength which has probably never been exceeded in modern vessels. In the first place, the double bottom was carried, as shown in our cut, well above the water-line, and the upper deck, like the bottom, was of cellular construction, and consisted of a series of longitudinal girders extending throughout the entire length of the ship and closed in at top and bottom by plating. Fully 30,000 plates were used in the vessel, and when she was launched her estimated weight was about 8,500 tons. Provision for safety was made by building the ship with twelve watertight compartments below the lower deck and nine compartments above it. The ship carried four decks in all, and her passenger accommodation, in respect of the total number carried, was far ahead of anything that has ever since been attempted, provision being made for 800 saloon passengers, 2,000 intermediate, and 1,200 steerage passengers. The staterooms and saloons were built on what were for those days very generous proportions. The main saloon measured 36 feet in width by 100 feet in length and 13 feet from floor to ceiling.

On her first trip to this country she made the passage in eleven days two hours. Her maximum speed was 14½ knots, and her average speed during the time



"Great Eastern"—Length over all, 692 feet; beam, 83 feet; depth, 57½ feet; displacement on 25½ feet draught, 27,000 tons; horse power, 8,000; maximum speed, 14½ knots.
"Oceanic"— " 704 " " 68 " " 49 " " " " 32½ " " 28,500 " " 28,000; " " 21¼ knots.

"GREAT EASTERN" AND "OCEANIC" COMPARED.

she was under full steam was about 13 knots. Although, financially, she was a failure, her vast size proved most opportune for the task of laying the transatlantic cable. The latter days of the great ship were somewhat ignominious. After being sold to an enterprising speculator, who used her for show purposes, she was sold for old iron and broken up on the banks of the Mersey. If we bear in mind that the art of iron shipbuilding was in its infancy at the time she was built, we must admit that the construction of the "Great Eastern" was, and is to-day, the greatest engineering feat of the nineteenth century, and reflects the highest credit upon her designers, J. Scott Russell and I. K. Brunel.

THE "OCEANIC."—We have recently described the "Oceanic" at such great length that it will not be necessary at this time to do more than recapitulate her leading features. In her lines and general arrangement the new ship is an enlargement of the White Star boats "Majestic" and "Teutonic," and unless one is near enough to realize her gigantic proportions, she might easily be mistaken for either of these vessels.

DIMENSIONS OF THE LARGEST OCEAN STEAMERS.

Name of Ship.	Date.	Length Over All.	Beam.	Depth.	Draught.	Displacement.	Speed.
		Feet	Feet	Feet	Feet	Tons	Knots
Great Eastern	1858	692	83	57½	25½	27,000	14½
Paris	1888	560	63	42	26½	15,000	20
Teutonic	1890	585	57½	42	26	13,800	20
St. Paul	1895	554	63	42	27	16,000	21
Campania	1893	625	65	41½	28	19,000	22
Kaiser Wilhelm der Grosse	1897	649	66	43	29	20,000	22·62
Oceanic	1899	704	68	49	32½	28,500	21¼

The accompanying table shows what an advance in size has been made in the "Oceanic" over existing ships. She is 42 per cent larger than the next largest transatlantic liner, "Kaiser Wilhelm der Grosse," whose displacement on a draught of 29 feet is 20,000 tons. Following the "Kaiser Wilhelm" is the "Campania," of 19,000 tons, and then in order of size come the "St. Paul," of 16,000 tons, the "Paris," of 15,000 tons, and the "Teutonic," of 13,800 tons. But though the vessel is so much larger, she does not compare in speed with the fastest of the transatlantic liners. Her indicated horse power is only 28,000, or the same as that of the "Kaiser Wilhelm der Grosse," and the estimated sea speed is only 20 knots an hour, as against a sea speed of over 22½ knots, which has been achieved by the North German Lloyd vessel. It is the belief of the White Star Company that the average transatlantic traveler cares less about extremely high speed than is generally supposed, and it is believed that by giving the "Oceanic" sufficient power to enable her to make the trip with great regularity, the company will not only effect a great saving of fuel, but will meet all the wishes of the traveling public. Thus, it is claimed that the saving of twelve hours by pushing a vessel across the Atlantic at the highest speed frequently serves merely to bring the ship into New York Harbor just too late to pass Quarantine. This necessitates the passengers being detained on board until the following morning.

In the construction of the vessel great attention has been paid to the elements of strength and stiffness. The frames are heavy channel irons of steel 9 inches in depth, spaced 31½ inches from center to center. The plating varies in thickness from 1 inch to 1⅛ inches. The double bottom extends throughout the full length of the ship, and in general is a little over 5 feet in depth, except beneath the engines, where, in order to comply with naval requirements, the depth is increased to 7 feet. Great strength is also derived from the five steel decks, which are completely plated from stem to stern. Including the inside floor of the ship's bottom, there are seven distinct decks, and above these a boat deck which extends for several hundred feet amidships. The captain's bridge is about 96 feet above the keel, and will be 68 feet above the water when the ship is down to her present load line of 29 feet.

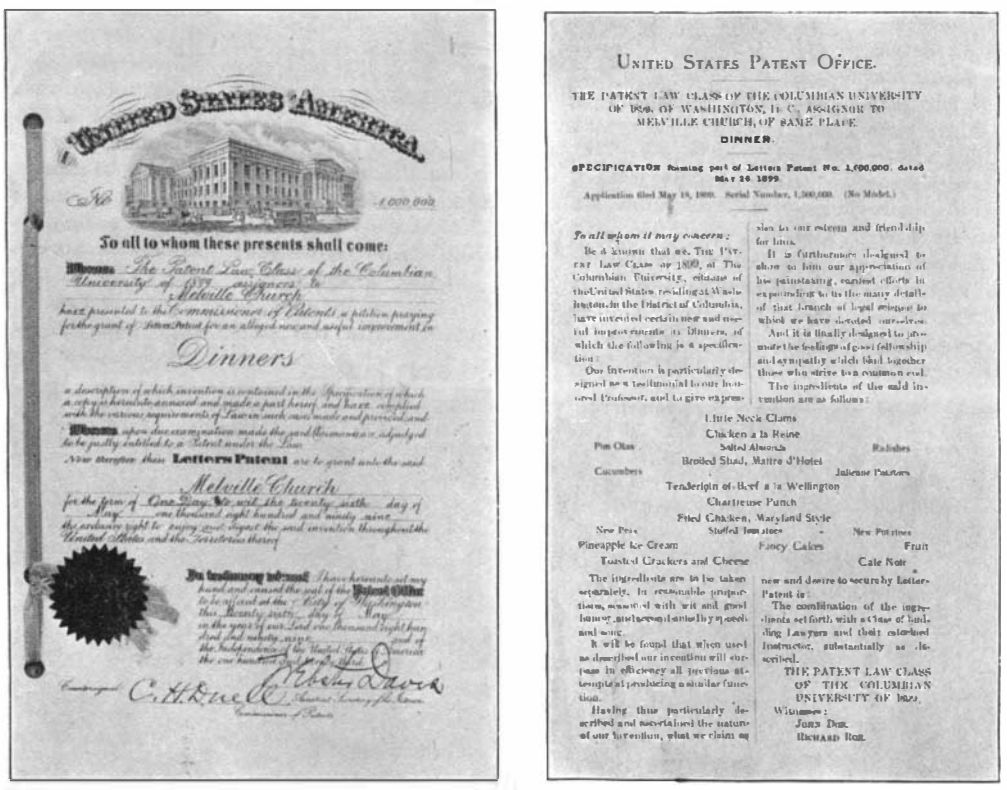
The engines are of the twin-screw triple-compound inverted type, working upon four cranks, are set according to the Schlick system, which is designed to reduce vibration and has shown excellent results in practice. The cylinders are high pressure 47½ inches, intermediate 79 inches, and two low pressure 93 inches in diameter, the common stroke being 72 inches.

There are accommodations for 410 first-class passengers, 300 second-class, and 1,000 third-class passengers, and as the crew numbers 390, the total number of people on board when the ship carries her full complement will be 2,100. The decorations are carried out with the good taste which is a marked feature in all the vessels of this line, and while it is rich there is nothing gaudy or over-elaborate. The saloon has the generous proportions of 64 feet in width by 84 feet in length. It has a seating accommodation of 350. The opening in the ceiling under the glass dome is 21 feet square, and the four sides between the pendentives contain allegorical figures that represent respectively Great Britain, America, New York, and Liverpool. The library is an exceedingly picturesque room, measuring 53 feet in length by 40 feet wide, with a height of 9 feet 6 inches from floor to ceiling. An excellent effect has been secured in this room in breaking away from the long, straight sides and forming nooks and recesses. We cannot attempt to enter any further into a detailed description of the passenger accommodation on this fine vessel. It is sufficient to say that her vast size and weight insure a degree of spacious comfort and steadiness of movement which have never before been realized in ocean travel. The total cost of the vessel was five million dollars.

In conclusion we must confess that, contrary to our expectations, the "Oceanic," on a near inspection, looks every inch of her great size. There is a sense of roominess and steadiness both above and below decks far in excess of anything experienced on other large ships, and her behavior in a seaway on the passage over was up to and beyond expectations.

A NOVEL MENU CARD.

One of the most curious menu cards on record was used by the Patent Law Class of 1899 of Columbian University, Washington, D. C. By the courtesy of one of those who were fortunate enough to partake of the repast, we are enabled to present our readers with a reproduction of this interesting menu card, which simulates a United States patent issued for one day. We are pleased to note that the "ingredients are to be taken separately, in reasonable proportions," and that they are to be "seasoned with wit and good humor and accompanied by speech and song." Of course dinners are very much alike and we do not doubt that the statement of the "invention" that "it will be found that when used as described, our invention will surpass in efficiency all previous attempts to produce a similar function" will at once be challenged. This question will never be decided without recourse to the Court of Appeals of bon vivants.



MENU CARD SIMULATING A PATENT.

The patent was supposed to be issued for the term of one day, and it will probably not be reissued unless some satisfactory grounds can be given, such as failure to produce the desired effect as specified in the preamble.

The Reduction of Prints as Contrasted with the Reduction of Negatives.

The August issue of the Photographische Rundschau contains a long article by Herr Janko on the reduction of prints, the essential feature of this article being a useful contrasting of the conditions under which negatives and prints may be treated with advantage. In the first place, there must be a clear understanding as to the difference between true reduction and the mere removal of a general veil or fog, the latter operation being of special importance in relation to prints, as an amount of veil which may be of no practical importance in the case of a negative will sometimes ruin a print, as by reflected light a slight veil may completely mask a vigorous or fully gradated print. Further, a consideration of this subject will show that reducers which are excellent in the case of negatives may be useless for slightly veiled prints. The persulphate of ammonium is a case in point, as it does not sufficiently attack the faint deposit. Farmer's ferricyanide reducer, as also cupric chloride, ferric chloride, and cupric bromide, are excellent fog or veil removers in the case of negatives, but when used for prints are subject to the disadvantage that the faintest deposits of silver which remain take a yellowish tone, and sometimes the whole surface of the paper takes a yellowish tint. The general yellow tint which often arises when Farmer's reducer is used for prints may be removed by a sodium sulphite bath or by Belitski's alum and hydrochloric acid bath, but neither of these will remove the yellowish tint of the faint gradations of the true silver image. A fog-eliminating reducer not subject to this disadvantage is prepared as follows: Stock solution—Water, 100 parts; iodide of potassium, 10 parts; iodine, 1 part. From 2 to 5 c. c. of this liquid are added to 100 c. c. of water, and the positive print is immersed, when the fainter deposits become rapidly converted into silver iodide, and this salt must be removed by a hyposulphite bath, a 10 per cent strength being convenient. Ordinary papers are frequently sized with starch, and this will cause a general blue coloration, but this blue coloration disappears in the hyposulphite bath. Still, the blue coloration is an inconvenience, as it renders it difficult to judge of the progress of the reduction; hence, a more convenient all-round fog-removing reducer for prints is the following: Saturated solution of alum, 50 parts; 4 per cent thiocarbamide solution, 50 parts; glacial acetic acid, 1 part. The print being immersed in this bath, the dish is rocked until the reduction has sufficiently progressed, after which the print is washed.—Amateur Photographer.

The Camphor Barometer.

A recent number of the weekly bulletin of questions and answers, published by the secretary of the French Association for the Advancement of Science, submits the following problem says The Monthly Weather Review:

How can we explain the formation of clouds, threads, and crystals that are produced in the so-called chemical or camphor barometer, which consists of a solution in alcohol of equal parts of three substances, the nitrate of potash, camphor, the hydrochlorate of ammonia, if the glass tube that contains this solution is hermetically sealed, and the variations of temperature to which it is subjected have no influence on the phenomenon?

This form of barometer is found everywhere in English-speaking countries under the names of "the farmers' weather glass," "the domestic barometer," or some other equally misleading title. In some forms that the editor has tested, there is scarcely any apparent change in the clearness of the liquid, year after year. In other instruments, the crystals of camphor assume different forms, from day to day, which are certainly very interesting to observe and study, but have nothing to do with the weather and storms, and even less than one would expect with the current temperature. To the meteorologist and farmer, these instruments have no value, but to the student of molecular physics, they are well worth an investigation.

The gas in the space above the liquid being a mixture of air and vapor of alcohol exerts a very variable pressure upon the liquid below; the latter is saturated with the three chemicals above mentioned, but as its temperature and pressure vary, it alternately rejects and absorbs a slight surplus of camphor. The rapidity with which this change takes place appears to decide the question as to the crystalline or fibrous structure of the visible cloud. Nearly all the changes in the appearance of the camphor cloud seem to depend upon the rate at which the changes of temperature take place, and the time that is given to the solid to collect into larger crystals and settle to the bottom or rise to the top, according to the relative density of different parts of the liquid. The ascending and descending currents going on within the liquid are slow and barely appreciable, but must have an effect upon its cloudy appearance.

THE projected ship canal from Georgian Bay to Montreal would mean the saving of 725 miles in the transportation of grain from Chicago to Liverpool; all but 29 miles is open river and lake waters.