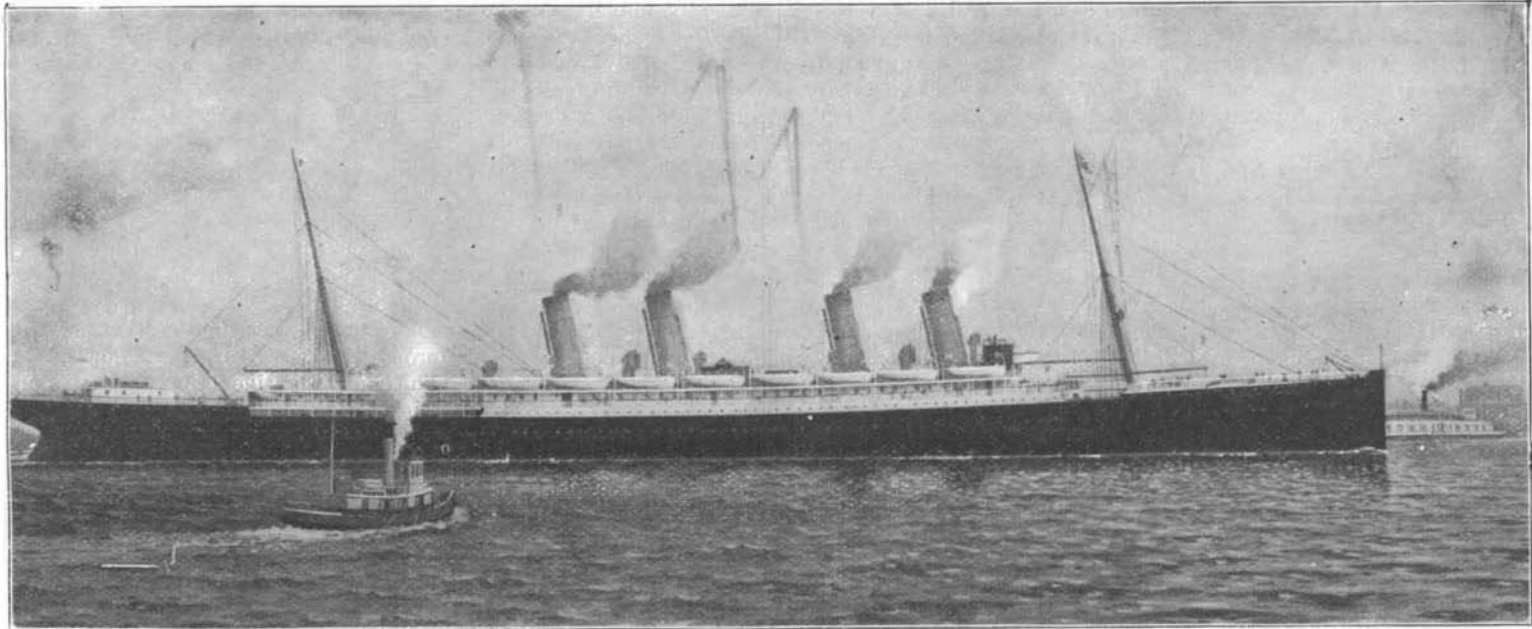


THE LATEST GREYHOUND OF THE ATLANTIC.

The truly splendid performance of the Kaiser Wilhelm der Grosse, of the North German Lloyd line, on her maiden trip, has fully justified all the expectations of the past few months. She passed the Needles at

tation is reasonable. If she could maintain this speed over the Queenstown route, the trip could be made in about 4 days and 21 hours, and the Southampton route could be covered in 5 days and 8 hours. This, of course, will scarcely happen, as such high daily averages can

displacement 20,000 tons. She thus exceeds every ship afloat in all her dimensions except one, the huge freighter Pennsylvania, of the Hamburg-American Line, being of about 3,000 tons greater displacement when fully loaded. The following comparison with existing ships



THE KAISER WILHELM DER GROSSE.

2:30 A. M. on Tuesday, September 21, and covered the Southampton route of 3,050 knots in 5 days, 22 hours and 35 minutes—an average hourly speed for the whole trip of 21.39 knots. The best previous run was made by the St. Paul, of the American Line, in August of last year, when the distance was covered in 6 days and 31 minutes. The longest day's run was 564 knots, which is two knots more than the best day's run of the Lucania. The highest average speed to the credit of an Atlantic liner is that of the Lucania, which has maintained 22.01 knots for the whole passage from Queenstown to New York.

The average hourly speed for the day on which the Kaiser Wilhelm made 564 knots was 22.75 knots; and

only be maintained under exceptional weather conditions, such as rarely, if ever, occur for a whole trip. How greatly tidal and weather conditions affect the speed of these ships is shown by the fact that the Lucania on one occasion ran from Queenstown up to the Mersey bar, a distance of 240 knots, in exactly 10 hours, which would give her an hourly average of 24 knots. It was found on inquiry that both tide and weather were in her favor, and that every effort was made to reach the bar before low water.

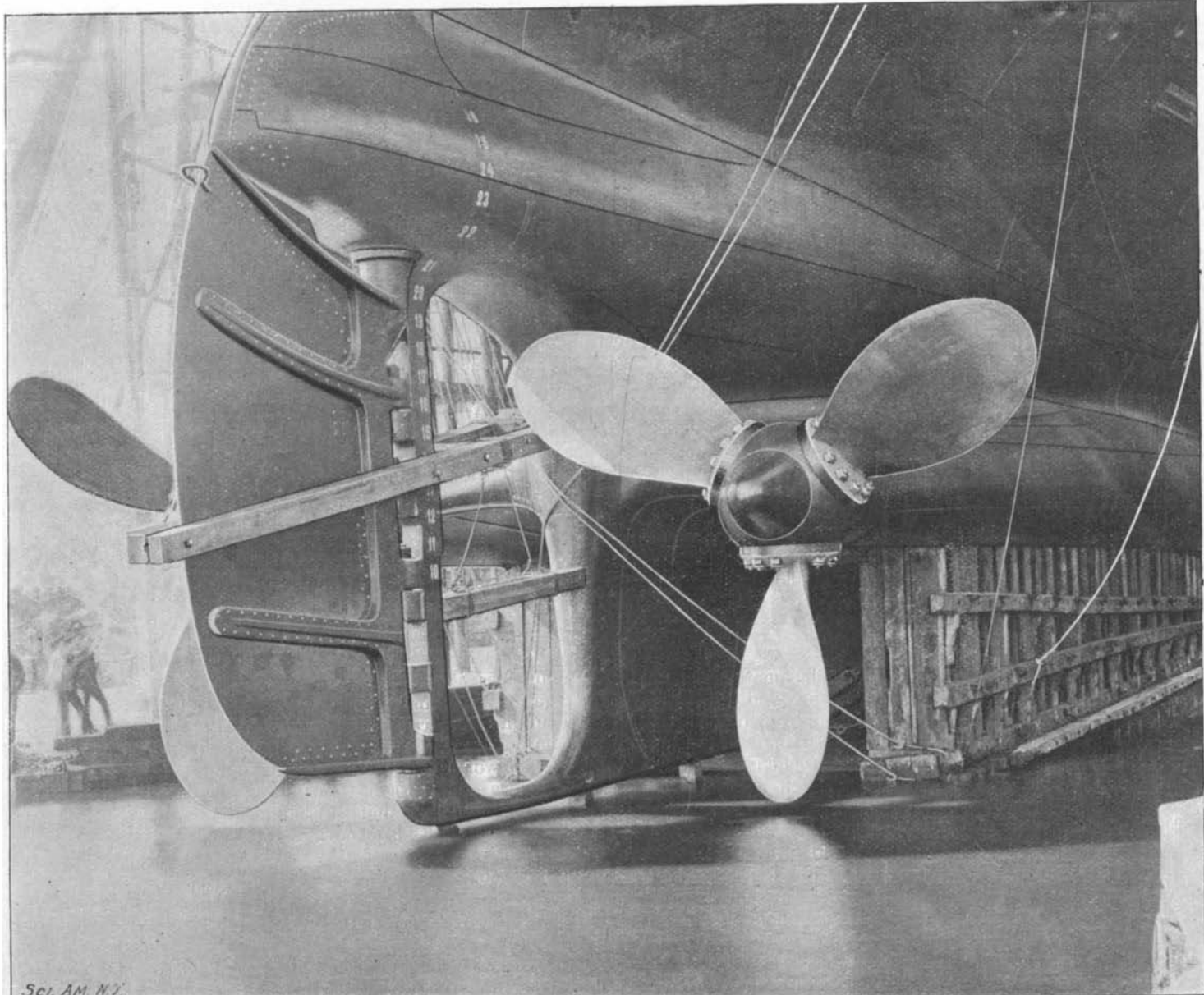
The maximum indicated horse power of the Kaiser Wilhelm was 28,430; the coal consumption was 500 tons per day, the revolutions of the propeller 77 per minute. She has a bunker capacity of 4,950 tons, and can carry

and with the Great Eastern, now broken up, and the Oceanic, now building for the White Star Line, will be timely:

	Length Over All.	Beam.	Depth.	Displacement.	Horse Power.	Sea Speed.
Great Eastern...	692 feet.	83½ feet.	58 feet.	32,100 tons.	6,000	11
Lucania	620 "	65¼ "	43 "	19,000 "	*30,000	*22.01
Pennsylvania..	585 "	62 "	42 "	23,400 "	5,500	14.5
Kaiser Wilhelm.	649 "	66 "	43 "	20,100 "	28,430	21.39
Kaiser Friedrich	599 "	64 "	41 "	17,500 "	?	?
Oceanic.....	704 "	68 "	50 "	25,000 "	?	?

* Trial horse power, 33,000; trial speed, 23¼ knots.

The Kaiser Friedrich, which will make its maiden trip



THE BRONZE PROPELLERS OF THE KAISER WILHELM.

Diameter 22 feet 3¼ inches. Weight 26 tons each.

it is confidently expected that, when she has been running long enough to work the engines and boilers up to their best performance, the new boat will be capable of making 570 knots per day. Considering what excellent work has been done on the maiden trip, the expect-

enough fuel to serve for the round trip. The engine and boiler room staff comprises 90 stokers, 75 coal passers, 18 oilers and 17 engineers.

The principal dimensions are as follows: Length, 649 feet; beam, 66 feet; depth, 43 feet; tonnage 14,000 and

in the spring of next year, is generally spoken of as a sister ship to the Kaiser Wilhelm, though its dimensions are considerably less. It is said by the company that it will be a faster ship by from three-quarters to one knot than the larger vessel—a prediction which the

great reputation of its builder, Schichau, of Elbing, as a builder of fast ships makes very probable.

In its general appearance and internal construction and arrangements, the Kaiser Wilhelm resembles the Lucania more than any other ship. Her greater length is emphasized by the four great funnels, and the greater sheer which she possesses adds greatly to her appearance. A novel feature is the addition of bilge keels to prevent rolling, and these, with the high freeboard forward, render her a remarkably steady and dry boat in rough weather, as was shown in the stormy weather of one or two days of the passage.

The hull is constructed on the well known cellular principle. There are 16 transverse bulkheads extending to the upper deck and one longitudinal bulkhead in the engine room. The boilers are placed in four separate watertight compartments. Twenty-four large lifeboats are carried on the awning deck. The ship has been built in accordance with the requirements of the Imperial German Navy Department, and in time of war she can enter the service as a cruiser.

We present an illustration showing the propellers and the construction of the stern, which is quite a departure from the type common to most ships of this class. It will be seen that the plating just below the water line and above the rudder is swelled out into a cigar-shaped form. This is done to accommodate the connections of the hydraulic steering gear, the arms of which work within the space thus provided. The steering gear was constructed by Brown Brothers, of Edinburgh. The tail shafts are entirely inclosed by bringing the plating of the ship out and around them.

The engines are built on the Schlick system, and run in remarkably even balance, the vibration common to most large ships being noticeably absent. There are four cylinders to each twin engine, as follows: One 52 inch high pressure, one 89 $\frac{1}{4}$ inch intermediate, and two 96 $\frac{1}{2}$ inch low pressure. The three-bladed bronze propellers are 22 feet 3 $\frac{1}{4}$ inches diameter and 32 feet 10 inches pitch and weigh 26 tons each. The crank and the screw shafts are of nickel steel, the shafting being 198 feet long. The two condensers have 35,522 square feet of cooling surface, and the 11,060 tubes, if placed end to end, would measure 25 miles in length. There are 68 auxiliary engines, comprising 124 steam cylinders. For riding the ship of water there are pumps available whose combined capacity is 3,600 tons per hour.

The steerage passengers are placed forward, the second class aft and the first class amidships. A novelty which will be appreciated is the placing of the first cabin staterooms on the upper and promenade decks, above the level of the bulkheads. This gives free access from one part of the vessel to the other, without having to climb stairways. Moreover, the rooms being high above the water, the portholes can be kept open in comparatively rough weather. The large dining room, capable of seating 350 guests, is on the main deck, between the two sets of smokestacks. On either side are three alcoves and overhead is a large skylight. This magnificent room is 66 feet wide and extends entirely across the ship. The open well in the center is really an alcove gallery upon the deck overhead, from which a view may be obtained of the room below. The decorations are in white and gold, in the early Italian Renaissance style. At the four corners of the dining room are four smaller dining rooms for the use of parties of 20 or 30. They are named after the mother, the wife, the great statesman and the famous soldier of King William "the Great," as his grandson has ambitiously named him. They are respectively named the Queen Luise, Empress Augusta, the Bismarck and Moltke rooms, and each is decorated with mural paintings illustrating scenes in the lives of these persons. The drawing room above the gallery or vestibule just mentioned is noted for its full length oil painting of William I, by Prof. Koner. The emperor is shown in the imperial ermine with the sword, crown, and scepter. Notable features are the smoking room, with its decorations in light colored oak, and its cozy alcoves and easy chairs upholstered in raised light brown leather. Perhaps the most exquisite room is the library, which is situated forward of the drawing room. It is decorated in rococo, with Gobelin tapestry and unpolished walnut.

There are in all 200 staterooms, accommodating 350 first class passengers. Many of these are arranged for family use, and include sitting room, bedroom and bathroom. The second class staterooms, 100 in number, can berth about 370 persons. Most of these rooms are on the upper deck. The second class dining room extends the full width of the ship and is fully equal to the first class dining room on some of the other ships.

To adequately describe the many features of interest in this vast ship would take more space than is at our disposal. Perhaps as impressive a fact as any is the large number of people which is necessary to run the Kaiser Wilhelm. Including the waiters, stokers, engineers, sailors and officers, the total is 450. If these be added to the 800 steerage, 370 second class and 350 first class passengers, we have a total of 1,970 souls who are housed, fed and safely carried at railway speed over the boisterous Atlantic.

Development of Fruit Flavors.

Some very interesting and suggestive results have been obtained by Jacquemin, who finds that, by the addition of the leaves of fruit trees which in themselves have no marked flavor, to saccharine solutions undergoing alcoholic fermentation, a very marked bouquet of the fruit is developed. Thus, by immersing pear or apple tree leaves in a 10 or 15 per cent solution of sugar, and adding a pure yeast, which by itself gave rise to no marked flavor, after fermentation a liquid was obtained which had a strong odor of pear or apple respectively and an excellent flavor, and on distillation gave an alcoholic distillate in which this aroma was still more marked. Vine leaves act in a similar manner, and the author suggests that it may be possible to improve the bouquet of a poor vintage by the addition of some leaves during fermentation. It is noteworthy that the results are far more marked when the leaves employed are from trees in which the fruit is approaching maturity. The author infers that the flavors of fruits are due to a body elaborated in the leaves, possibly of a glucosidal nature, which is not transferred to the fruits until the latter approach maturity, and is then acted upon by the special ferments contained in the fruit juices and develops distinctive flavors. The matter would appear to be of considerable practical importance.—Comptes Rendus, cxxv, 114.

A PRACTICAL ELECTRIC DARK ROOM LAMP.

Photographers who are traveling around the country often have great difficulty in doing their work well from the trouble experienced in getting a good dark room lamp. The smoke and smell, and danger from fire, in using an ordinary lamp in an extemporized dark room, where the facilities for working are often of the crudest form, are among the principal obstacles to doing good work. To obviate this trouble the Lecoll Storage Battery Company, of 76 Jackson Boulevard, Chicago, have brought out the efficient storage battery



A PORTABLE DARK ROOM LAMP.

lamp shown in the accompanying illustration. This portable lamp will give the operator from eight to ten hours' continuous light with one charging, and the charging is readily effected by connecting the lamp with any direct current electrical system. It will be seen that the lamp proper is in a case in the front of which is a ruby glass. Thus the best possible light is rendered available, there being no chemicals to handle, and nothing whatever objectionable to the user. It is to be remembered that only a direct current system, and not the alternating current, is to be used in charging, as the latter would ruin the battery. The same company also make a combination bicycle and dark room lamp. This suggests itself as a most admirable device for amateurs.

Printing in Clouds.

The amateur when he first launches into photography, and has reached that stage in which he feels confident in being able to produce a good printable negative, finds that there are many things to learn before he is able to produce a class of work that will pass off as a carefully finished picture. A landscape without clouds is, after all, but half the picture, and the lazy method of sunning down—for lazy it is—is no more or less than a good excuse for the want of a little trouble to print a cloud carefully into the picture.

The present time of the year is a good one to procure a few cloud negatives, and if one or two are taken now and again when out picture hunting, a valuable stock will very soon accumulate. If taken on films, you can call it at once two negatives, from the fact of their being reversible.

Some workers advocate one method of procedure and some another; but all of them attain the same effect in the end, and it would be exceedingly difficult to cry aloud any one particular method as being better than another, but one that is easy of manipulation demands some attention.

The picture being printed, and the cloud negative having been chosen for the subject, the masking of the picture while printing in the cloud is the one main

point that has to be overcome. The joining up of the horizon lines is very often badly done, and if by chance the picture line is slightly intricate, it is here that generally a weak point exists.

Provide yourself with a dozen or so sheets of good white, thin tracing paper, cut to the size of the plate you are working, and when you have finished printing your landscape take it out of your frame, place it upon a small board, and place a piece of tracing paper over it, and retire to the other side of the room. You will then be able to draw with a fine pen over the most important objects in the picture a line from one side to the other, following, of course, the details. It is a matter of time that should be given to this part of the work, for without it you cannot succeed. When you have finished this outline, all that is necessary is to fill in the view half with Indian ink—artist's black or vermilion will do, if it does not irritate the eyes—the whole of the lower half of the paper, and let it get thoroughly dry, which will be but a few moments.

The cloud negative is now inserted in the printing frame, and the print, with the mask in register, is also placed in position in the frame, and the cloud printed in to the proper depth.

If you possess a retouching desk, these marks may be made at night from the negative. With a few pieces of stamp paper attach the edges from front of paper to glass side of the negative to prevent its slipping; afterward it can be detached and then blackened out.

The hard lines are softened to a nicety by printing through the tracing paper, and perhaps a little longer time is required to print.

In the event of a negative that has fortunately got clouds developed up, it very often happens, unless the picture is thin, that to print the clouds out properly the view has to be much overdone before the clouds have received enough to define them properly, unless masked in some way. The tracing paper mask comes in handy here. In printing upon paper that gives no visible image, such as carbon, platinotype, bromide, etc., it must be noted that the paper negative and mask should be placed well into one corner of the frame, and a note made of it on the back of the print, so as to provide against any chance of mistakes; for nothing is more annoying than to find, after all your pains, that you have manipulated your sky upside down upon the view when you come to develop the picture. It should be noted that a good white tracing paper gives no grain that will harm a print for the purpose that it is used, and care should be taken that it is not crumpled. It deteriorates with age, going yellow, which makes a long printing job, but the paper is cheap enough for one to make a fresh mask when required.—"Erudio," in Photographic News.

Scientific Expedition to Christmas Island.

When the world is fast becoming all mapped and labeled and described, and geologized and botanized, it is refreshing to learn that there are still a few miles of little known ground. Christmas Island, about 200 miles south of the western end of Java, the nearest land, from which it is separated by an ocean about four miles deep, is one of the few isolated spots on the earth that has remained practically uninhabited by man. It has now a small population numbering 22 persons, consisting of Mr. Andrew Ross, who is the only European, his family, and about a dozen laborers from Keeling-Cocos Islands, says the London Times. Mr. Ross, however, has only once penetrated to the further side of the island, the journey taking three days (the island is about twelve miles long and seven miles broad). Now, however, the island is to be used by the Christmas Island Phosphate Company, and a working party is now on its way there. Hence it is of peculiar importance that a scientific exploration should be undertaken to obtain an accurate account of the native fauna and flora before they are displaced by introduced forms of life.

Dr. John Murray, of Edinburgh, has offered to the trustees of the British Museum to defray the expenses of sending out a naturalist to collect everything indigenous to the island, and to present the specimens to the Museum, if the trustees will allow one of their officers to go out. The trustees have accordingly dispatched Mr. C. W. Andrews, of the department of geology in the Natural History Museum, to make an exhaustive survey and exploration of the island. The area is about 100 square miles, the highest point being about 1,200 feet, so that a considerable variety of temperature and other conditions occur. The fauna as far as known is remarkable for the very large proportions of species peculiar to the island. Thus three of the five known mammals, all the land birds, and four out of five land reptiles are endemic. Of insects, out of some thirty-five species that have been determined, twenty-three were new. In one respect the island is fortunate—there are no wild animals, snakes, or other creatures inimical to man. Most of the island is covered by thick forest growth, in which orchids and other epiphytes are very common, while it is probable that not one-third of the flora is yet known.