

## YACHT RACE ACROSS THE ATLANTIC.

On March 12, the transatlantic yacht race from Owl's Head, New York harbor, to Roche's Point, Queenstown harbor, was started. Up to the present writing (March 26), the relative position of the two competing yachts is unknown, as the reports brought in by the steamers are vague and conflicting. It therefore seems probable that the first authentic information will be sent out when the winner crosses the finish. Quick time is not looked for, owing to heavy seas and adverse winds.

The race is the result of a challenge issued by the owner of the *Coronet*, and is "for the purpose of testing and comparing the sea-going and sailing qualities of keel-schooner yachts built and now owned in this country." The race was open to all yachts of this description of American build, without any allowance whatever. This challenge was accepted by the owner of the *Dauntless*, and each yacht put up \$10,000, so that the winner will receive double this amount, less incidental expenses.

The principal dimensions of the two yachts are given below:

	<i>Coronet.</i>	<i>Dauntless.</i>
	Ft. In.	Ft. In.
Length over all.....	128 0	134 0
Length on load water line.....	128 0	117 7
Extreme beam.....	27 0	26 7
Extreme draught of water.....	13 6	12 3
Least freeboard.....	3 6	3 7
Length of mainmast.....	91 0	85 6
Length of main boom.....	68 0	68 0
Length of topmast.....	36 0	46 0
Perpendicular of sail triangle, as per New York Yacht Club rule.....	106 0	107 0
Base of sail triangle, as per New York Yacht Club rule.....	264 9	188 6
Sail tons, as per New York Yacht Club rule for racing measurement.....	114	111 2
Area of lower sails in square feet.....	7,125	6,941
Area of top sails in square feet.....	1,120	1,093
Area of square sails in square feet.....	3,125	2,965
Load displacement in tons.....	277	215
Ballast in tons.....	126	80
Tonnage, old measurement.....	360	287 7

The *Coronet* is considered to have two distinct advantages over her rival—she is larger and newer. She was built by the Poillon Brothers, at South Brooklyn, in 1885, while the *Dauntless* was constructed twenty-one years ago, at Mystic Bridge, Conn., by Forsyth & Morgan.

The *Coronet* crossed the finish line first, at 12:41 P. M., Queenstown time, on March 27th. Her time is next to the best ever made by a yacht from New York to Queenstown, and is especially remarkable as the weather, during the entire voyage, was uncommonly tempestuous, even for this season of the year. The actual time from the start was 14 days 19 hours 3 minutes and 14 seconds. The whole number of nautical miles sailed was 2,934. The longest day's run, 291.5 miles, was made on the 26th, and the two shortest, 39 and 51 miles, on the 22d and 23d respectively.

The *Dauntless* was sighted at 11 A. M. on the 28th.

## How to Electroplate Flowers, Insects, Etc.

Among the most recent efforts in this direction may be mentioned the improvements in the preparation of organic matter for metallization by galvanic deposit recently introduced by La Societe anonyme de Metallisation artistique des Animaux, Vegetaux, ou autres corps, of Paris, whose process consists in the employment of an albuminous liquid, with which the different substances in question are treated to prepare them for metallization. This liquid may be thus obtained: A quantity of snails or slugs are first washed in ordinary water, to free them from all earthy or calcareous matter; they are then placed in a vessel containing distilled water, and are left here sufficient time to give off slowly their albuminous matter.

The albumen thus obtained is now filtered and boiled for about an hour. After the boiling is added a quantity of distilled water sufficient to replace that lost by the boiling, and about 3 per cent of nitrate of silver. This liquid is then placed in bottles, hermetically closed, and kept in the dark; it will thus keep without any alteration. To use this liquid for the preparation of the objects, about 30 grammes of it is dissolved in about 100 grammes of distilled water. In this solution the objects are submerged for a few moments; they are then placed in a bath consisting of distilled water with about 20 per cent of nitrate of silver in solution, and afterward submitted to the action of hydrosulphuric gas, to reduce the nitrate of silver adhering to the albumen-covered surface of the object.

Thus treated, all organic matter is rendered fit to receive a galvanic deposit; and the galvanic products obtained by this process are far superior in fineness and neatness to those obtained by any other known process. Even the finest and most minute fibers and veins, the smallest unevenness of surfaces, and hairs scarcely visible to the naked eye are clearly discernible, and come out with striking neatness, the metallic deposit being of perfectly uniform thickness and adherence.

## Steamship Economy.

At a recent meeting of the Engineering Section of the Bristol Naturalists' Society, a paper on "Compounding Oscillating Marine Engines," of which the following is a summary, was read by Mr. J. W. J. Harvey:

In describing the method adopted, attention was called to the fact that in the search after economy the history of these engines is somewhat unique, if not altogether exceptional, from the circumstance that no less than three separate classes of engines had been at work in the same vessel—the *Juno*—viz., "jet condensing," "surface condensing," and "compound," under almost identical conditions of "draught of water," "displacements," "midship area," "propeller," etc., from which probably may be drawn some useful conclusions as to the cost of motive power in steam vessels, having regard to the description of machinery employed. With the "jet condensing" engines, working with a boiler pressure of 30 lb. per square inch, an indicated horse power of 1,605 was developed on a consumption of 92 tons of coal per voyage, giving the vessel a speed of 14 1-10 knots per hour. Subsequently the engines were fitted with a surface condenser and new boilers working at the original pressure of 30 lb. per square inch, when the same indicated horse power and speed were maintained on a reduced consumption of 84½ tons of coal per voyage.

At the time the above alterations were made—although it was seriously under consideration to fit the vessel with compound engines—the competition was not so keen as to warrant the heavy outlay such a change would have involved, and recourse was therefore had to the surface condensing arrangement. In process of time it is scarcely necessary to be reminded that competition in the shipping trade had become much more severe, so that the vessel had to compete with others in the same trade more recently built and fitted with compound machinery, and it is evident that she would be out of the race unless a considerable reduction could be made in the coal bill. The vessel was too good and too great a favorite to be cast aside as obsolete; and as the outlay for entirely new compound machinery would not have been justifiable, it was determined to compound the existing engines at as moderate a cost as possible, at the same time maintaining such a rate of speed as would enable her to hold her own with her more modern rivals. In carrying out this idea it was necessary to retain as much of the existing machinery as possible, and to do this it was determined to keep one of the existing cylinders as the low pressure cylinder of the compound arrangement, and to so proportion the new high pressure cylinder as to obtain the maximum power possible, and by this means the greater part of the existing machinery was preserved, one cylinder, the entablatures, shafts, paddle wheels, condenser, side frames, air, circulating, and bilge pumps being retained, and the new parts required consisted only of one cylinder, two sets of link motion, two feed pumps, a steam starting engine, and, of course, a pair of cylindrical boilers working at 80 lb. pressure. The result was a compound engine having cylinders 40 in. and 66 in. diameter by 72 in. stroke, giving 1,370 indicated horse power, and a speed of 13 4-10 knots per hour, on a consumption of 49 tons of coal per voyage, the conditions as to draught of water, etc., remaining the same as before. The conclusions to be drawn are, therefore, that with 335 less indicated horse power, we have the loss of three-quarters of a knot in speed, or, in other words, it takes 335 indicated horse power to get the last three-quarters of a knot, or about one-fifth of the whole power; that, when working with the jet condenser, the coal consumption was 92 tons per voyage. When working with the surface condenser, the consumption was 84½ tons per voyage, or a saving of 8½ per cent; and when compounded, the consumption was 49 tons per voyage, giving a saving of 46½ per cent over the jet condenser, and 42 per cent over the surface condenser. This result was deemed highly satisfactory, and has enabled the vessel to compete successfully with those of a more modern type, and to retain her place on the line in which, through all weathers and seasons, she has established for herself a favorable and widespread reputation.

## Peach Kernel Oil.

M. P. Guyot (*Rep. de Pharm.*) gives the following tests for oil of peach kernels:

With caustic alkalies it gives a dark yellowish-brown soap, easily soluble in distilled water. With phosphoric acid, at first a yellowish-brown emulsion, which becomes gray and then loses its color. Chloride of zinc forms dirty gray flocks in the liquid; and sulphuric acid, an orange-yellow coloration, passing through various shades of brown and red to a dark brown, the oil giving off a distinct odor of oil of bitter almonds as soon as it becomes warm. Sulphocarbonate of sodium affords an orange-yellow coloration, and acid nitrate of mercury produces no effect except when sulphuric acid is added, when the oil becomes of a clear citron-yellow. Bisulphide of calcium forms, with the oil, a granular canary-yellow soap, which subsequently loses its color.

## Correspondence.

## Centennial of the United States Patent Laws.

To the Editor of the *Scientific American*:

Noticing in your paper on the 12th ult. Mr. E. M. Shields' suggestion of celebrating in 1890 the centennial of the adoption and foundation of the United States patent office laws, I am pleased to see this important matter taken hold of by the *SCIENTIFIC AMERICAN*.

There is no doubt if all the inventors and men who have become rich through inventions would take an active interest in the matter in time. Why should we not have a celebration which would do credit to our country, and possibly be able to show the world that our country is the mother of invention?

DAVID G. WEEMS.

Baltimore, Md., March 16, 1887.

## Absorption through the Skin.

Ritter and Pfeiffer.—The method followed in their experiments was to rub well into the extensor surface of a healthy limb half an ounce of an ointment containing the substance under investigation, then to cover the spot with a protective bandage to prevent any possible absorption by the lungs, and after twenty-four hours to collect some urine and examine it for the presence of the drug. It was found that potassium iodide from a 10 per cent ointment passed into the urine in only one out of five cases, and this was after the ointment had been used for four days, when the skin had become irritated and its continuity practically destroyed by the prolonged action of the fatty acids derived from the decomposition of the lard. Sodium salicylate applied in the same way was never found, even in traces, in the urine; but salicylic acid invariably gave its characteristic color test with ferric chloride within a few hours after its application.

This behavior of salicylic acid is attributed to the property possessed by it of softening the epidermis and rendering it permeable, and the extent to which this takes place is shown by the fact that if the application of salicylic acid ointment be followed by one of potassium iodide ointment, the potassium iodide quickly passes into the organism and becomes detectable in the urine. When lard was replaced by lanolin, it was not found that the ointment manifested any superior penetrative power. Some other experiments made to test the capability of the skin to absorb substances sprayed on to it in watery solution gave, when precautions were taken to exclude the spray from the respiratory passages, only negative results.

## The Bids for Steel Armor Plates and Gun Forgings.

On March 22, four bids were opened by Secretary Whitney. These tenders referred to the supplying of "about 1,310 tons of steel gun forgings" and "about 4,500 tons of steel armor plates and appurtenances." The following is the abstract of the companies competing and of the terms agreed to:

Name of Company.	Armor plate.	Gun steel.
Cambria Iron Company.....	.....	\$851,513.90
Midvale Steel Company.....	.....	1,397,240.00
Bethlehem Iron Company....	\$3,610,707.50	902,280.79
Cleveland Rolling Mill Co....	4,021,500.00	.....

The Bethlehem Iron Co. agrees to provide the necessary plant to begin the delivery of the gun forgings within fifteen months, five months in advance of the requirements. It asks for the preference agreed to be given to the bidder who furnishes both classes of forgings, according to the naval department circular of August 21, 1886. The company, to prove its ability to carry out the contract, a condition exacted by the government, states that it has expended between \$300,000 and \$400,000 on its forging plant, and has on hand contracts amounting to \$500,000. It states that financial arrangements have been made for \$1,500,000 additional capital, and special engagements for the use of patents and for superintendence have been provided for with the largest European firms. The latter clause is said to refer to the great French works at Le Creusot. It is a source of the greatest gratification to find our American firms ready to undertake this work. It gives an additional proof of what always has been very patent, that the inventive and engineering genius of the country are able to cope with all of its needs and emergencies.

## A Paradise for Messenger Boys.

Intense excitement has been caused among the messenger boys employed by the Baltimore and Ohio Telegraph Company in Washington, D. C. A dozen Australian ponies for the use of the messenger boys recently arrived, and since then the boys of the city have gone wild over them. The ponies are small and very handsome, and as they stand saddled and bridled, with a rubber covering strapped on behind the saddle, they present a very neat and trim appearance, and, like the boys, they seem proud of their position. Since their arrival the B. & O. has been overrun with boys who want to be messengers, and are willing to work for nothing just to be able to ride one of the ponies.