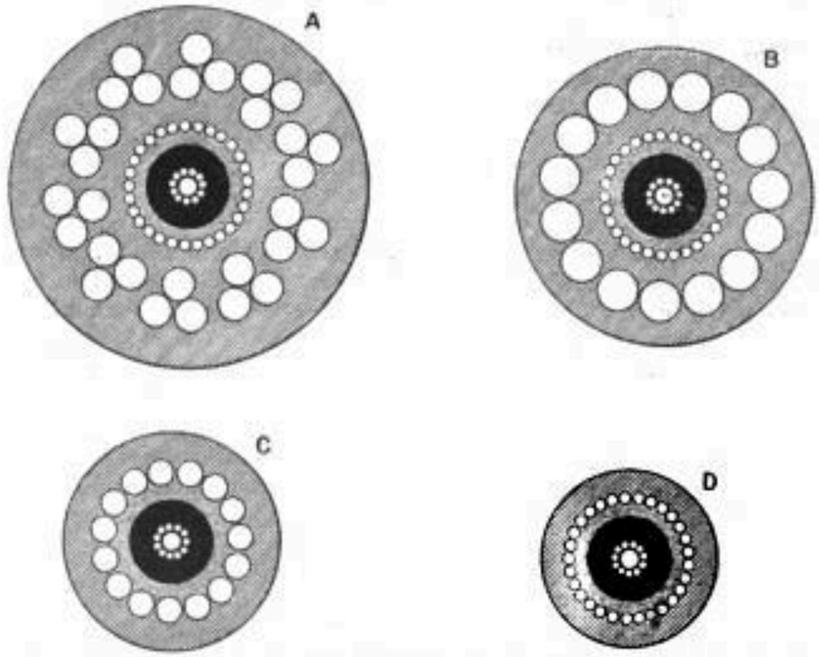
The New French Atlantic Cable.

AS has been previously announced in these columns, the new "French" transatlantic cable connecting Brest on the coast of France with Cape Cod, our Massachusetts station, was formally opened on August 17 in the presence of the acting Secretary of State of the U. S., Mons. Cambon, French Minister, and the officials of the French Embassy at Washington, when friendly greetings and congratulatory messages were exchanged between Presidents McKinley and Faure. The cable was manufactured and laid by the Société Industrielle des Telephones, and is owned by the Compagnie Française des Cables Télégraphiques. The ship François-Arago had been fitted up with the necessary appliances to do the laying of this cable, which is by far the longest submarine cable in existence, it being 3,165 nautical miles in length. It is also remarkable in having a heavier core than any other section, the next heaviest being the Anglo-American company's 1894 cable, the length of which



CROSS-SECTIONS OF THE "CAPE COD-BREST" SUBMARINE CABLE.

is 1,845 miles. In view of these facts, which make this cable of special importance, the following figures, which have been kindly furnished to us by the French Telegraphic Cable Company, will be of interest:

The core of the cable consists of strands of copper wire covered with an insulating covering of gutta-percha. The conductor consists of a strand of 13 copper wires weighing 660 pounds per nautical mile, of 6,074 feet, and composed of a central wire of 0.12-inch in diameter surrounded by 12 joined wires wound in helix form.

The resistance of the conductor thus formed does not exceed 1.850 ohm per nautical mile, at a temperature of 24 degrees centigrade. The dielectric weighing 400 pounds per nautical mile is formed of three layers of gutta-percha alternating with as many layers of Chatterton compound, the first of these being applied directly on the conductor so as to fill up the interstices left by the wires.

The electrical resistance of the dielectric thus formed is not less than 250 megohms nor more than 1,500 megohms per nautical mile at a temperature of 24 degrees centigrade.

The total weight of the core is 1,056 pounds per nautical mile for the copper and 400 pounds for the gutta-percha. The electrostatic capacity of the cable is 0.50 microfarad per nautical mile.

The sending speed of this new cable, which, as above stated, is a trifle less than twice the length of the Anglo-American cable, is about 90 letters per minute simplex. It has not been duplexed as yet and when this is done it will be interesting to compare the relative speeds of transmission of these two cables. These figures and those regarding the earning power on capital cost will, we trust, soon be forthcoming. From the data on hand, however, it appears that for the same length, the speed of the French cable should exceed that of the English cable by one per cent.

The core is covered with 2 layers of hemp or of tanned jute applied wet and wound in opposite directions so as to protect it from the wires of the armature. The protecting envelope of the cables is composed of jointed metallic wires of different kinds, diameters and number, in accordance with the types shown in the figure. The envelope of the deep sea cable, type D, is composed of 24 steel galvanized wires of 0.067 of an inch in diameter, and of medium resistance, after galvanization, wound in a helix, the minimum strain before breaking being 160,000 pounds per square inch. The breaking resistance of the cable thus formed is not less than 11.451 metric tons. Another deep sea portion is very similar, except that the breaking strain is 14.314 metric tons. The envelope of the intermediary cable marked C is formed of 15 galvanized iron wires of 0.13 of an inch in diameter, after galvanization, wound in a helix, minimum breaking strain 52,800 pounds per square inch. The breaking resistance of the cable thus formed, is not less than 9.374 metric tons.

The envelope of the coast cable marked B is composed first of an envelope of galvanized iron wires, similar to that of the deep sea cable, type D, as regards the number and diameter of the wires, and of a second envelope made of 15 galvanized iron wires of 0.2 of an inch in diameter, after galvanization, wound in a helix, the minimum breaking strain being 52,800 pounds per square inch. The breaking resistance of the cable thus constituted is not less than 25.352 metric tons.

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The envelope of the shore end cable marked A is composed of first an envelope of galvanized iron wires, similar to that of the deep sea cable, type D, with regard to the number and diameter of the wires, and then of a second envelope formed of ten strands of 3 galvanized iron wires of 0.16 of an inch in diameter after galvanization, wound in a helix, the minimum breaking strain being 52,800 pounds per square inch. The breaking resistance of the cable thus formed is not less than 31.915 metric tons.

The metallic envelope is finally covered with two layers of rough jute twine, or of two linen tapes, Johnson & Phillips system, steeped with bituminous and silicious composition, according to professional rules.

The exterior diameter of each type thus covered is not more than:

For the deep sea cable..............................1.067 inches.
For the intermediary cable ....1.279 "
For the coast cable ....1.891 "
For the shore end cable ....2.167 "

The tests of insulation, of resistance and of capacity which were made after the completion of this cable, and which lasted several days, were of the most satisfactory kind. This cable, which is laid further South than all other transatlantic cables, is considerably less affected by earth currents, then they, and this on account of its distance from the Newfoundland shores.