

than the eye, as, according to the position of Davy, that a wire becomes a worse conductor in proportion to its increase of temperature, the amount of gas in the voltameter should be, as indeed in these experiments it turned out to be, in inverse proportion to the degree of ignition. As a further test, the increased volume of the gas by expansion was noted, though the apparatus was not constructed for showing this increase with delicate accuracy.

Platina wire ignited by a given constant voltaic battery in	Effects to the eye.	Voltmeter gave at the rate of one cub. in. in	Expansion of volume.
Hydrogen . . .	{ Not visible even } { in the dark . }	19	35 to 43
Carbonic acid .	{ Cherry-red by } { daylight . . }	21.5	35 . . . 43
Oxygen . . . .	{ Incandescent by } { daylight . . . }	23.5	35 . . . 45
Nitrogen . . . .	Same . . . . .	24	35 . . . 45
Atmospheric air	Same . . . . .	24	35 . . . 45

I had intended to have carried these experiments further with other gases,\* and also with condensed and rarefied air, but was interrupted; and as it may be some time before I may be able to renew them, I think I cannot do better than submit these experiments, with your permission, to the readers of the Philosophical Magazine, while the attention of scientific men is directed to this subject; actual practice can alone test their efficacy.

Lond., Edin. & Dublin Philos. Mag.

### *Telegraphic Communication between France and England.*

Amidst the many wonderful inventions of modern days, wherein the faculties of man have overcome difficulties apparently insurmountable, and made the very elements themselves subservient to his power and use, there are none more wonderful than that now about to be carried out by the establishment of submarine telegraphs, by which an instantaneous communication will be effected between the coasts of England and France. The British Government, by the Lords Commissioners of the Admiralty, and the French Government, by the Minister of the Interior, have granted permission to two gentlemen, the projectors of the submarine telegraph, to lay it down from coast to coast. The site selected is from Cape Grisnez, or from Cape Blancnez,

\* I have some doubt whether the different gases do not exercise a specific action on the ignited wire, somewhat in the nature of catalysis; if a wire be brought by the voltaic current to a white heat in atmospheric air, and a vessel of hydrogen inverted over it, the light is as suddenly extinguished as the flame of a candle would be.

on the French side, to the South Foreland, on the English coast. The soundings between these headlands are gradual, varying from seven fathoms near the shore on either side to a maximum of 37 fathoms in mid-channel. The Lords of the Admiralty have also granted permission to the same gentlemen to lay down a submarine telegraph between Dublin and Holyhead, which is to be carried on from the latter place to Liverpool and London. The submarine telegraph across the English Channel will, however, be the one first laid down: the materials for this are already undergoing the process of insulation, and are in that state of forwardness which will enable the projectors to have them completed, and placed in position, so that a telegraphic communication can be transmitted across the Channel about the first week in June. When this is completed an electric telegraph will be established from the coast to Paris, and thence to Marseilles. This telegraph, throughout France, will be immediately under the direction of the French Government, as, according to the law of 1837, all telegraphic communications through that country are under the absolute control and superintendence of the Minister of the Interior. Upon the completion of the submarine telegraph across the English Channel, it is stated that a similar one, on the most gigantic scale, will be attempted to be formed under the immediate sanction and patronage of the French Administration; this is no less than that of connecting the shores of Africa with those of Europe by the same instrumentality, thus opening a direct and lightning-like communication between Marseilles and Algeria.

Railway Magazine.

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*Mr. Rand's inventions for the Manufacture of Flexible Metal Tubes for preserving Paint and other matters.*

Mr. Carpmael stated that Mr. Rand, who is an artist, had, from the inconvenience and waste of color which takes place when it is put in the bladders ordinarily used, been led to endeavor to find a substitute, and the use of metallic vessels suggested itself. After experiments he succeeded in forming them of so thin a body of metal that they are capable of being collapsed so as to shut out all air. The tubes are made of block tin the 150th part of an inch in thickness, and have at their upper end a nozzle and screw cap, and are closed at the bottom by being folded over once or twice with a pair of pincers so as to exclude all air. As the color or other matter which they contain is pressed out, the tubes are collapsed and thus the upper part of the tube always remains full. Each tube has to go through the following process of manufacture:—A small piece of block tin is put into a die upon which a punch worked by a fly-press descends and forces the metal up, of the required thickness, between the surfaces of the die and the punch; thus by a single blow the body of the tube is formed. It is then removed to a second press, by which the screw on the neck of the tube is formed, and by a second blow, in the same press, the maker's name is stamped upon it. The cap is