A Telegraph Circuit of over Ten Thousand Miles.

Operators at the office of the Postal Telegraph Co., on State Street, Albany, lately witnessed a conversation carried on by wire over the largest circuit ever worked, and was the greatest telegraphic feat yet accomplished.

As explained to the Albany *Express* reporter, who dropped into the neat and business-like office while the experiment was going on, the trial was a most interesting one. It appears that Special Commissioner Henry Norman, who is making a tour of the British colonies, having arrived at Vancouver, carried on a conversation with London, England, over the Canadian Pacific and Commercial Co.'s wires. At one end of the line was Mr. Hearst, of the San Francisco *Examiner*, and at the other end Mr. Stead, of the *Pall Mall Gazette*, London.

There was an unbroken telegraph circuit from San Francisco to New York, 4,600 miles, the distance from New York to London, *via* Canso, N. S., being 3,500, or 8,100 miles in all. The telegraph lines making up this circuit ran from San Francisco to New York, *via* Vancouver, B. C., Montreal, and Albany, connecting at New York with the Mackay-Bennett Postal Cable Co. Telegrams exchanged between San Francisco and London were therefore only repeated at New York, Canso, and Bristol, England, the latter point being the landing place of the Mackay-Bennett cable. The object of this experiment was to demonstrate the fact that London and Vancouver were practically within "speaking distance" of each other. These unbroken lines demonstrate the fact that their system can be successfully maintained during the most rigorous season of the year.

At 1:12 P. M. Mr. Norman, at Vancouver, asked Mr. Stead, at London, a question, receiving a reply in five minutes. Mr. Stead then asked, "How far off are you from London?" In four minutes reply flashed back, "Nine thousand six hundred miles," which, with the 1,200 miles to San Francisco added, makes a grand total of 10,800 miles. Conversation was kept up for two hours. Mr. Norman said, among other things, "I can see the Pacific, and in a few days start on a 4,000 mile voyage in another English ship, the Parthia, over another ocean; yet I am able to report myself to you and talk as quickly and easily as if we were speaking through a tube. The wire which unites us is a most striking symbol of our imperial unity, and of the unfailing federation which will one day girdle the globe, Is not the click of this key, heard in two hemispheres, more eloquent than all the arguments of empire ever penned?"

The Mystery of the Boomerang.

An exhibition of boomerang throwing was recently given by a party of Australian natives at Munster, before some German scientific men, who are endeavoring to discover the cause of the boomerang's curious flight. *Iron* tells its readers that the instruments used were of two sizes, the larger being a slender crescent about 2 feet long, 2½ inches wide, and ¼ inch thick, made of an exceptionally heavy Australian iron-wood. This boomerang was jerked up into the air about a hundred yards, when it flew straight away, then turned to the left, and returned in a curved line back to the thrower, whirling around constantly and whizzing unpleasantly. One badly directed projectile passed through a spectator's hat, and with a cut as clean as that of a razor. We have not heard what conclusions the German scientists have come to, or whether they have satisfactorily solved the problem, but, according to a German manufacturer, who has made some 11,000 toy boomerangs, the mystery of the movement lies in the shape, the boomerang having a sharper curvature in the middle, with unequal length of the two arms, which must be made of equal weight by unequal thickness. The peculiarity of motion is said to be due to the difference in the length of the arms, which diverges the curve of rotation from the circular.

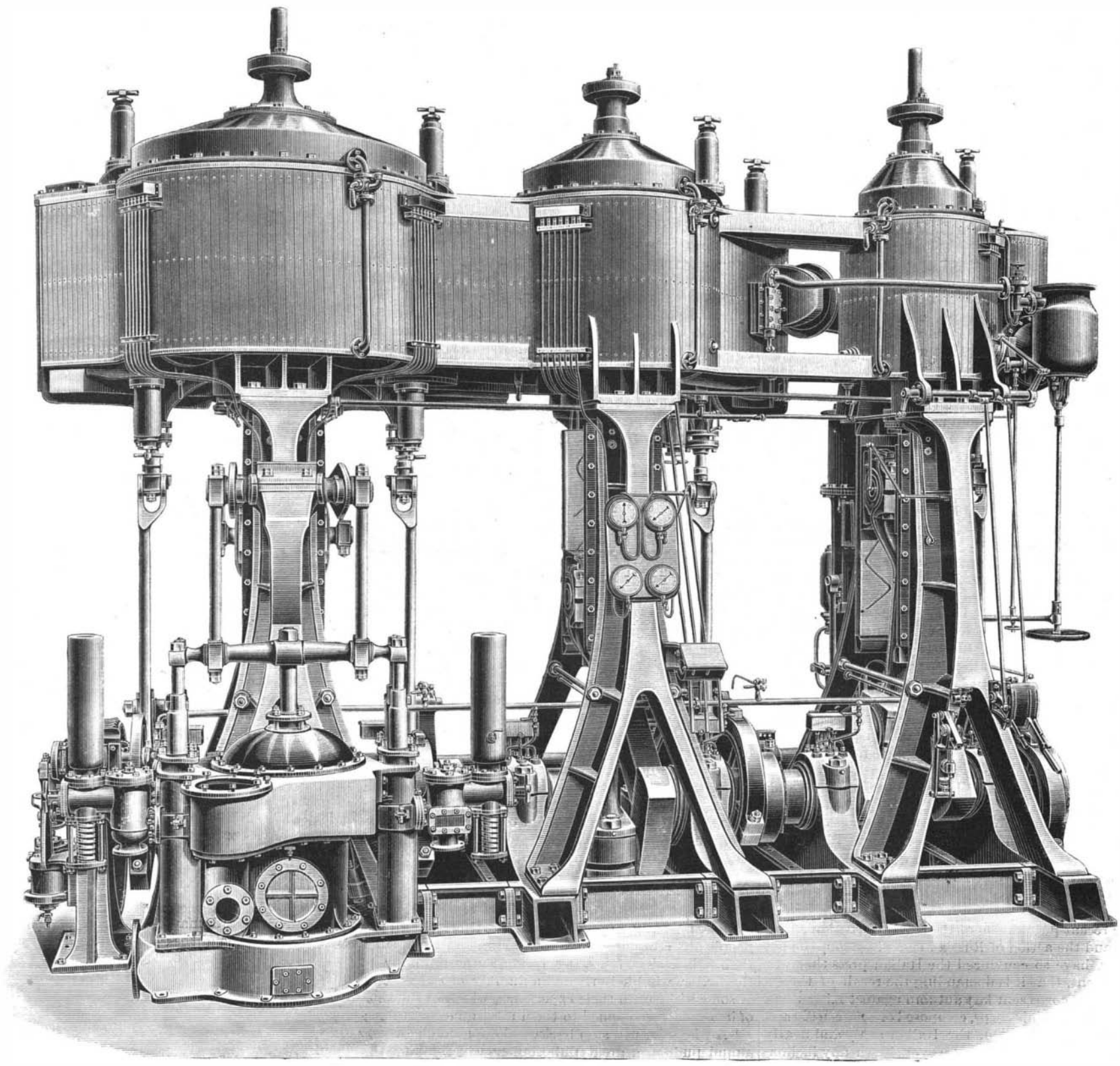
ENGINES OF THE STEAMSHIP COURIER.

We give views of the engines of the high speed steamship Courier, which has been built to the order of Messrs. Huddart, Parker & Co., of Melbourne. The vessel has been built by Messrs. Swan & Hunter, of Wallsend, and is 220 feet long by 30 feet beam and draws 11 feet of water. Owing to the comparatively small dimensions of the boat, Messrs. R. and W. Hawthorn, Leslie & Co., Limited, the builders of the machinery, had a somewhat difficult task to execute in driving the vessel at a speed of 17½ knots, and it became necessary to adopt special means of producing the great power required, without unduly increasing the weight of the machinery or the space occupied by it. Forced draught and machinery of the high speed type were therefore adopted, and in the latter cast steel and gun metal have been largely employed.

The illustrations represent the engines as erected in the shop. They are of the triple expansion type, and are fitted with Marshall's patent valve gear. The bed plates and main pillars are of cast steel. The condenser, which has 5,000 square feet of cooling surface, is separate from the engines, and is of gun metal. The cylinders are 30 in., 46 in., and 73 in. in diameter respectively, by 36 in. stroke. Steam at a working pressure of 150 lb. per square inch is supplied from two multitubular boilers, 15 ft. 3 in. in diameter and 11 ft. long, each of which has four corrugated furnaces, 3 ft. 2 in. inside diameter. The total heating surface provided is 5,110 square feet, and the grate area is 158 square feet.

The forced draught is supplied by two double-sided fans, each driven by a high speed compound engine, and capable of producing in ordinary work an air pressure of 2 inches on the water gauge in the stoke hold.

The trial trip took place on October 28, 1887, the vessel running two double runs on the Admiralty course of 9·6 knots between Cullercoats and Newbiggin, off the mouth of the Tyne, when an average speed of



TRIPLE EXPANSION ENGINES OF STEAMSHIP COURIER.

17·548 knots was obtained. The engines ran smoothly and well, indicating 2,979 horse power, the revolutions being 124 per minute and the vacuum 26·5 inches.—*Engineering.*

How to Abolish Beggary.

A correspondent of one of our contemporaries recently asked United States Senator Stanford, of California, what could be done in this country to abolish beggary. The answer of the philanthropic millionaire was as follows:

There is only one way. Dry up the source—abolish the conditions that make beggars. To try to cure poverty by street charity is like trying to stop a hole in your roof by mopping up the puddles that gather on your floor. Nobody is worse off because the Vanderbilts are worth $200,000,000. If they had not the wealth it would not exist at all. It is only in those communities where millionaires are possible that the average citizen has enough to eat. Now, what causes poverty? 1. Ignorance of how to save money. I found beggars in California in 1850, when any man could go out with a tin pan and earn $5 before breakfast. When by working three hours a day a man could make his board and clothes, there were always shiftless creatures around whom the rest had to support. It is the same way now. The soil is wonderfully fruitful there. Merely 20,000 men produce all the wheat of the State and export 1,000,000 tons of it every year, and yet there are beggars. We can cut, thrash, and sack wheat at an expense of one and a half cents per 100 pounds, potatoes cost only a half a cent a pound, and flour is only $4 a barrel, and yet there is want. An important cause is unthrift. People do not understand economy or practice it as almost every rich man has had to some time in his life. I really believe that there would be beggars in the world before night if $20 gold pieces were to be sown broadcast every morning, and so distributed that every man, woman, and child were certain to get some.

2. The sale and use of liquor. As long as there are ten times as many saloons in this country as there are of both churches and schools, and they are mainly supported by the very poor, the sources of misery are pretty obvious.

3. A lack of manual training. This last need is most serious. If so many people could be taught trades that the entire product of this country were doubled next year, the wages would be doubled, either in increase of money received or in the smaller cost of the necessities of life to be bought. More capable, skilled hands—that is one of our greatest needs. My great hope is in my university, which I wish to build so tall and deep and broad that the rudiments of every trade and occupation may be taught. When everybody knows how to do some difficult and useful thing, poverty will rapidly diminish.

Bursting of a Great Gun.

An Armstrong breechloading gun recently burst at the Royal Arsenal. The officials represent the occurrence as merely one of a small percentage of failures which are always expected in the course of the proof trials; but the great size of the weapon, which was a 10 inch gun of about 38 tons weight, gives prominence to the accident, and the fact of several rounds having been fired before the burst took place points to some cause beyond a mere flaw in the material, which the first test ought to have revealed. The chase or barrel of the gun was blown clean out of the chamber end, and fell in one piece to the ground.

Calcimine and Its Varied Tints.

The season for renovating the interior of our dwelling houses is near at hand, and some of our readers may wish to prepare their own calcimine. We give the following rules for the purpose of enabling them to do so:

Soak one pound of white glue over night; then dissolve it in boiling water and add twenty pounds of Paris white, diluting with water until the mixture is of the consistency of rich milk. To this any tint can be given that is desired.

Lilac.—Add to the calcimine two parts of Prussian blue and one of vermilion, stirring the mixture tho roughly, and taking care to avoid too high a color.

Brown.—Burnt umber.

Gray.—Raw umber, with a trifling amount of lampblack.

Rose.—Three parts of vermilion and one of red lead, added in very small quantities until a delicate shade is produced.

Lavender.—Make a light blue and tint it slightly with vermilion.

Straw.—Chrome yellow, with a touch of Spanish brown.

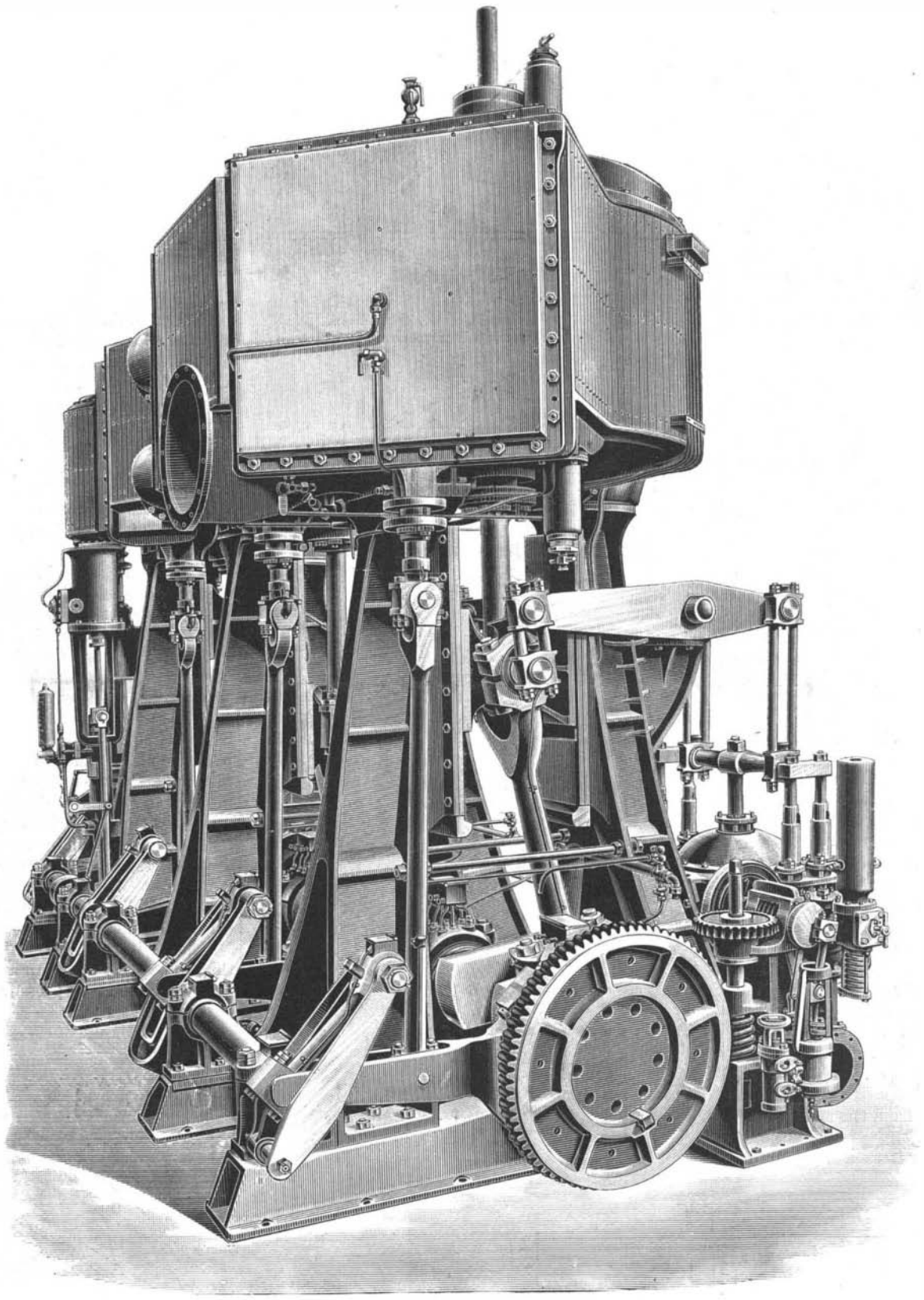
Buff.—Two parts of spruce, or Indian yellow, and one part of burnt sienna.

Blue.—A small quantity of Prussian blue will give a soft azure tint. Dark blue is never desirable.

Delicate tints in the foregoing varieties of colors are always agreeable and tasteful, and so great care must be taken that they are not too vivid. The tints will always appear brighter than in the calcimine pot, and the workman or workwoman must keep this fact in mind when adding the coloring powders. It is a good idea to give the ceiling a calcimine two or three shades lighter than that of the walls, so that it may seem merely a delicate reflection of their deeper tones. The ceiling can be calcimined with the lighter tint, and then more coloring added for the walls.

Timber Forests in Siam.

The Hon. Carter Harrison, ex-mayor of Chicago, is giving some attention to the timber interests during his tour around the world. In a recent letter from Bangkok, Siam, copied in the *Lumberman*, he says: "A large amount of logs are floated down the Menam and sawed at Bangkok. But so difficult is the getting of logs to the river, there being absolutely no kind of roads, that the timber sells here at about 60 cents a cubic foot. And yet I am assured there are vast quantities of this timber rotting in the forests within comparatively short distances from the streams. The people are so utterly lazy that their labor can never be depended upon to build roads or in any way to develop the resources of the land. Foreign energy and capital must be called into requisition. The great teak and ebony forests are several hundred miles from the coast. These are so dense that the superintendent of the construction of telegraph, Mr. Fritz—an American—consumed two or three months in cutting a way for a line through a forest of sixty-five miles. There was an advance party of some five hundred natives cutting the trail, and a second party of one hundred and seventy putting up the poles and wire. Elephants were used for all carrying. So terrible was the jungle fever, that in that one jungle some two hundred and fifty natives died within two months. If a dose of twenty grains of quinine failed to break the fever, death almost immediately ensued."



TRIPLE EXPANSION ENGINES OF STEAMSHIP COURIER.

Cloud Indications.

M. Camille Flammarion has recently published a little book on meteorological observations, from which *La Genie Civil* makes some interesting extracts, on the subject, more particularly, of weather predictions. Most people know that a fall in the barometer indicates the approach of a storm, and a high barometer indicates fair weather; but more than this may, according to M. Flammarion, be learned from the mercury column. When, he says, clouds are to be seen moving in a long line, whatever may be the height of the barometer, it may be taken as certain that a depression or storm center exists in a direction which may be readily ascertained by facing in the direction in which the clouds are moving, and extending the left hand. On land, the position of the storm center is of no great importance, except, perhaps, as showing whether it will cross a given locality, but at sea it is often possible for a captain, after finding in what direction the most violent part of a storm lies, to steer away from it, and soon bring his ship into pleasant weather. As to the distance and seriousness of the storm, something may be learned from the velocity with which the procession of clouds move; a severe and near storm being always indicated by a swift cloud movement and a high barometer.—*American Architect.*

The Sinking of the Cordillera of the Andes.

The Cordillera of the Andes has for some time been exhibiting a curious phenomenon. It results from observations made upon the altitudes of the most important points, that their height is gradually diminishing. Quito, which in 1745 was 9,596 feet above the level of the sea, was only 9,570 feet in 1803, 9,567 in 1834, and scarcely 9,520 in 1867. The altitude of Quito has, therefore, diminished by 76 feet in the space of 122 years. Another peak, the Pichincha, has diminished by 218 feet during the same period, and its crater has descended 425 feet in the last 25 years. That of Antisana has sunk 165 feet in 64 years.—*La Gazette Geographique.*