condensed vapor to be covered by coal-smoke. These fogs usually accompany a high barometer, and are frequently dry in their character.

It is a well-known fact that cold air on the tops of hills, being heavier than the air below, slides down the slopes; so that the lower parts of hillsides are actually colder than the plains at some distance from the hills. Now, London, in the Thames valley, is surrounded by hills, — to the north, Highgate, Hampstead, and Harrow; in a westerly direction, Putney and Wimbleton; and in a more southerly direction, Clapham and Sydenham. The air is colder on these hills than in London, with its millions of inhabitants, its coal-fires and factories: hence it is heavier, and will have a great tendency to slide down the hills towards the town and the river. Should the air in town be on the point of saturation, and the cold air from above saturated with vapor, it is obvious that the increased cold from above will produce a precipitation of moisture, and it will come to pass that a fog is produced. If the hill-tops be not only colder than the air below, but enveloped in a fog, it stands to reason that the fog below will be all the denser, and especially in the neighborhood of water, such as the river Thames, and the ornamental waters in the parks.

TURNOUT ON THE SPRAGUE ELECTRIC ROAD AT READING, PENN.

THE ROSE POLYTECHNIC INSTITUTE.

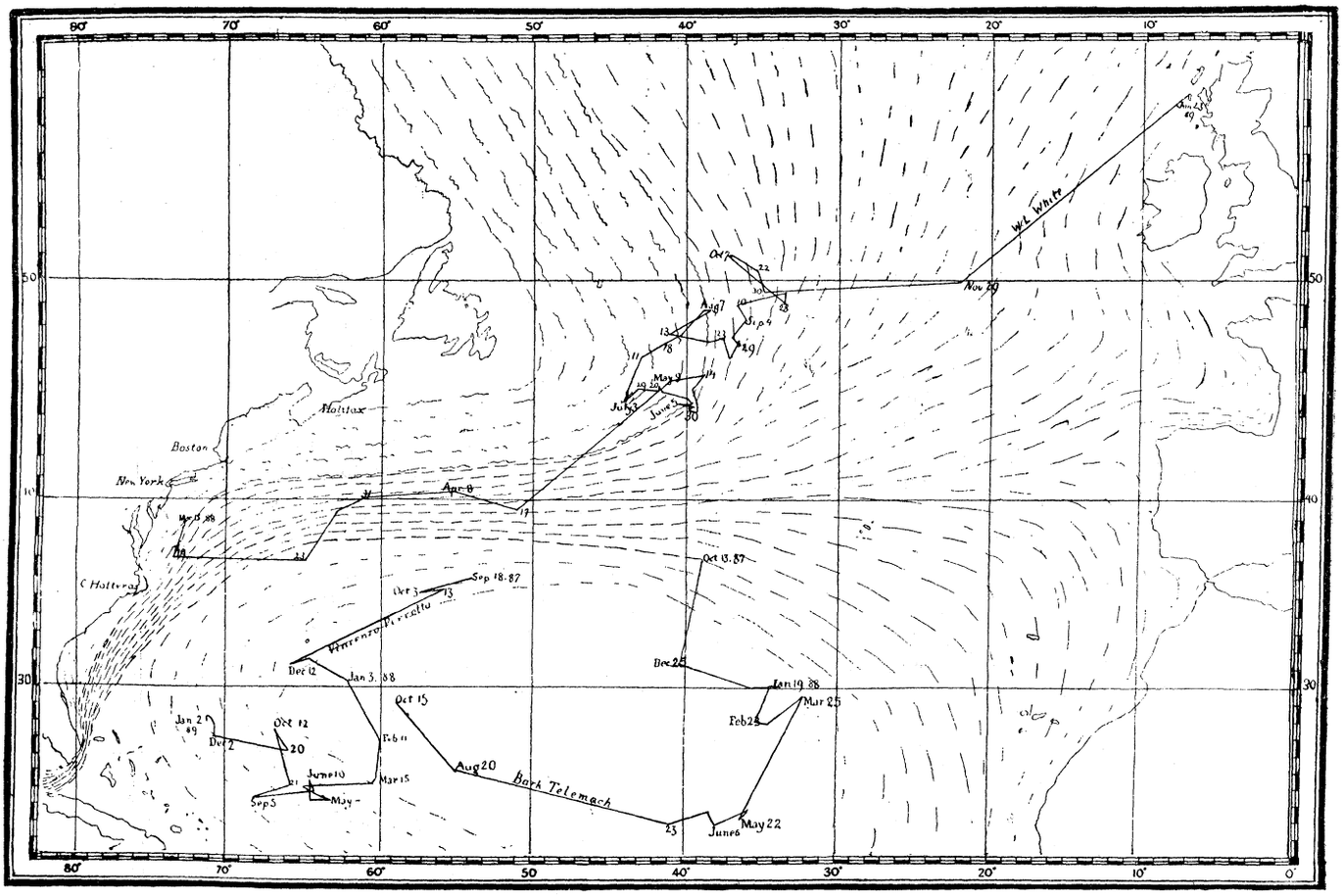
THE Rose Polytechnic Institute is one of three or four schools in the United States which are especially devoted to the education of civil, mechanical, and electrical engineers. It owes its existence to the generosity of the late Chauncey Rose of Terre Haute, Ind., who bequeathed something more than half a million of dollars for its establishment and support. It is one of the youngest of the technological schools of the country, having been opened in the year 1883. One of the peculiar features of the institute is the thorough and extensive "shop-practice" of the students in mechanical engineering. Not only are machines designed, and working drawings made, but actual construction is required, and is made possible in extensive workshops, the equipment of which has cost over forty thousand dollars. In electricity, in addition to the instruments and appliances usually found in electrical laboratories, it possesses the most complete and accurately adjusted series of Sir William Thomson's electrical balances in this country; and there is a completely equipped testing-room for the purpose of calibrating and standardizing commercial instruments. Another important feature is the restriction placed upon the number of students admitted. The plan of the institute is to limit the attendance to such an extent as to realize the great benefits arising from small classes. Ample facilities will therefore be afforded to all who undertake its courses of study. Those who are contemplating preparation for either mechanical, civil, or electrical engineering, will do well to consult the catalogue of the Rose Polytechnic Institute.

THE DERELICT AMERICAN SCHOONER "W. L. WHITE."

MR. EVERETT HAYDEN, meteorologist to the Hydrographic Office, has compiled the reports on the history of the derelict schooner "W. L. White," and the results of his investigation have been published on a supplement to the monthly "Pilot Chart," a portion of which is reproduced here. Besides showing the track of the "W. L. White," those of the derelict barks "Telemach" and "Vinocuzo Perrotta" have been plotted on the map.

Mr. Hayden reports that a telegram dated Stornoway, Hebrides Islands, Scotland, Jan. 23, 1889, marks the termination of the remarkable cruise of this derelict vessel. Abandoned off Delaware Bay during the great blizzard, March 13, 1888, she has now completed her long and erratic transatlantic voyage, and lies stranded upon Haskeir Island, one of the many little rocky islands of the Hebrides, in latitude 57° 42′ north, longitude 7° 42′ west. The track of this vessel, as plotted on the "Pilot Chart" from month to month during this long interval, has been of constantly increasing

interest, and a study of her track and the tracks of other derelicts plotted on the accompanying chart cannot fail to be valuable to every navigator of the North Atlantic, as illustrating the general course followed by these dangerous obstructions to navigation, and the irregularities to which this general course is subject. The fact may well be noted here that the tracks and latest reported positions of derelicts and wreckage on the high seas are shown on no other chart but the "Pilot Chart," and the danger to navigation caused by them is sufficiently indicated by the mere statement that the number recorded each month in the North Atlantic alone varies from twenty-five to as many as forty-five, every great oceam storm largely increasing the number. Therefore it is very desirable that masters of vessels should supply the Hydrographic Office with exact detailed descriptions of all such derelicts sighted, in order to make it possible to identify them with others previously reported.



TRACK OF THE DERELICT SCHOONER "W. L. WHITE."

The following brief summary of the leading features in the cruise of the "White" will be found of interest: She was a three-masted schooner, belonging to Mr. A. F. Ames of Rockland, Me., lumber-laden, and after being abandoned started off to the southward under the influence of the inshore current and the north-west gale, with masts and portions of her sails standing, and ensign set with union down. Upon reaching the Gulf Stream, she turned away to the eastward, and commenced her long cruise toward Europe, directly in the track of the thousands of vessels engaged in trans-atlantic commerce, drifting blindly about at the mercy of wind and current. The most remarkable feature is the zigzag track she followed in mid-ocean, between latitude 44° and 51° north, longitude 33° and 44° west, from the beginning of May till the end of October. Previous to this time she followed a course about east-north-east at an average rate of about 32 miles a day, and subsequently she moved east and north-east 1,260 in 84 days, an average of 15 miles a day; but during this long interval of six months she remained within this comparatively small area, drifted back and forth by the Gulf Stream and the Labrador current, and tossed about by the varying winds, a constant menace to navigation along the greatest highway of ocean commerce in the world. During these six months alone she was reported by 36 vessels, three of which sighted her in a single day. In her cruise of ten months and ten days she traversed a distance of more than 5,000 miles, was reported 45 times, and how many more vessels passed dangerously near her at night and in thick weather it is impossible to even estimate.

The direction and force of the winds that helped to determine her track during this long voyage, as indicated by reports from hundreds of vessels in her vicinity at various times, were as follows For a week after being abandoned, and in fact throughout March, with the exception of four days, she experienced north-westerly winds of varying force. Westerly winds continued during the first nine days of April, followed by five days of variable. From April 15 to 18 she encountered a strong westerly gale, followed by southerly winds, which prevailed the remainder of the month. Throughout May the winds were very variable, never more than two days in succession from the same direction. Moderate northerly gales were experienced on the 6th and 20th, and a fresh gale from the south-east on the 23d. Variable breezes continued throughout June, with westerly gales on the 24th and 30th. July opened with a moderate gale from the west, followed by south-westerly winds for a fortnight, hauling to west and north-west. Similar weather prevailed during August, with the exception of moderate gales from the eastward on the 6th, and from the westward on the 16th, 17th, and 22d. Generally westerly winds prevailed from Sept. 1 to 19, and easterly during the remainder of the month. During November the winds were westerly throughout, including several strong gales. Variable breezes were encountered during the first half of December, but during the remainder of the month the prevalent directions from south to west, with strong westerly gales from the 19th to the 25th. South-westerly winds prevailed from Jan. 1 up to the time she went ashore on Haskeir Island.

The history of this derelict furnishes the strongest possible proof of the importance of this subject to masters of vessels, as well as of the cordial support which they have given to the Hydrographic Office in its efforts to collect and publish early and accurate information by means of which this danger to navigation may be diminished. The various commercial nations should unite in the effort to keep the seas clear of such obstructions, and it is a subject that may well be discussed by the forthcoming International Maritime Conference.

HEALTH MATTERS.

TYPHOID STATISTICS. — Professor Ruata of Perugia is authority for the statement that there are annually in Italy nearly 300,000 cases of typhoid-fever, of which number 27,000 prove fatal. One-third of the persons in Italy who reach the age of forty-five have the fever, and in some districts more than three per cent of the population die from this one cause.

ARSENIC IN FABRICS. — The *London Chemical News* states that Mr. A. W. Stokes has examined a hundred samples of imitation Indian muslins and cretonnes, and found that twenty-three per cent contained arsenic in appreciable quantities, the highest proportion 2.1 grains of white arsenic per square yard. The colors in which arsenic was principally present were the terra-cotta reds and the greenish-browns. Of the wall-papers submitted to Mr. Stokes by various manufacturers, ten per cent were found to contain arsenic. Thirty other articles of household use, such as plushes, velvets, carpets, mats, silks, etc., were examined, and in only one sample — a little flax mat of green color — was arsenic found.

BACTERIA IN THE GLACIERS. — Dr. Schmelk of Christiania (*Centralblatt für Bacteriologie*) has found vast colonies of bacteria in the ice of the Jerstedalsbræ glacier and in the streams fed by it. They appear under the form of rods, and resemble the *Bacillus fluorescens liquefaciens*. During their period of growth these bacteria emit a fluorescent material. They multiply with great rapidity during periods of thaw.

A NEW DEODORANT. — Bromine has for a long time been recognized as being valuable in the treatment of gangrene and foul-smelling ulcers; but until recently its merits as an effectual and cheap deodorant have not been appreciated, according to the *New York Medical Journal*. It was brought into prominence a few months ago by Mr. Martin, the chemist of the health department of this city, who suggested its use upon the earth thrown up in laying the electric subways. As it is a by-product obtained in the manufacture of salt, and is not used extensively in the arts, it is sold at a very reasonable price, — about seventy cents per pound. It has the property of precipitating the hydrocarbons of illuminating-gas, and thus can be used to deodorize the earth exposed in excavations in the vicinity of gas-mains. More valuable than this is its effect upon decomposing organic bodies, which it renders completely inoffensive. This property renders it particularly valuable for use in stables, privy-vaults, urinals, cesspools, or in any place which may contain foul-smelling organic matters. It is soluble in about thirty-three parts of water; but a solution of this strength is not advisable, as there is a constant escape from it of the vapor of bromine, which is very irritating to the eyes and air-passages, and which may even attack wood and metals. For ordinary purposes it is used in solutions containing one part by weight to about eight hundred of water. In this strength it may be used freely without its affecting any thing which it may touch. A few gallons used daily will remove all ammoniacal odors from stables, or a few quarts will thoroughly deodorize the entire plumbing system of an ordinary house. It also might be used with advantage upon ordinary house-garbage, which usually becomes offensive so speedily in warm weather. There would appear to be scarcely any limit to its usefulness in this branch of sanitary science; and it will, as soon as its merits are better known, undoubtedly be adopted universally as a substitute for the deodorants now in use, which usually act by substituting one unpleasant odor for another. The only drawback in its use lies in the fact that the undiluted bromine is strongly corrosive, and, if it touches the skin, causes a painful burn. Where it is used in large quantities, this can be obviated by opening the bottle, or, what is simpler, breaking it, under water. As its use becomes more extended, it will undoubtedly be put up in pearls or tubes containing only as much as would be needed at one time in the average household.

TRANSMISSION OF DIPHTHERIA. — Dr. De la Roche believes that diphtheria can be transmitted from animals to man. He has had under his care two women suffering from diphtheria, which he thinks he has traced to the contamination of drinking-water from a cistern by the excrement of pigeons, which had been washed down by the rain from the roof on which these birds had perched. Admitting the possibility of the transmission of diphtheria in this manner, the means of combating it are simple. In places where spring-water and well-water are not available, or where the supply consists of rain-water collected in cisterns, it is well to limit pigeon-breeding, and to construct dove-cotes as far away as possible from dwelling-houses. As to the construction of cisterns, they should be built according to the rules of public hygiene laid down by Gania in his work entitled "Utilité des Citernes."

MALARIA. — Dr. Henry B. Baker, the well-known sanitarian, contributed a paper, at the last meeting of the American Medical Association, on "Malaria, and the Causation of Periodic Fever." After an able discussion of the subject, he sums up as follows: "So far as evidence is yet presented, it seems to be proved, then, that (1) intermittent fever is proportional, directly or inversely, to the average daily range of atmospheric temperature; (2) the controlling cause of intermittent fever is exposure to insidious changes, or changes to which one is unaccustomed, in the atmospheric temperature; (3) in the mechanism of the causation of intermittent fever, the chief factor is the delay in the re-action from exposure to cool air (this delay, extending to a time when greater heat-loss should occur, results in the abnormal accumulation of heat in the interior of the body, and in disturbed nervous action, — the chill), and the final re-action is excessive because of the accumulation of heat, and sometimes because it occurs at the warmest part of the day; (4) the fever is the excessive re-action from the insidious influence of the exposure to cool air, and it is periodical because of the periodicity of nervous action, and because the exposure and the consequent chill are periodical, owing to the nightly absence of the warmth from the sun; (5) residence in valleys, or on low lands through which or upon which cold air flows at night, and thus causes insidious changes in the atmospheric temperature, favors intermittent fever; (6) in our climate, those measures, such as drainage, which enable the soil to retain warmth during the night, and thus reduce the daily range of temperature immediately over such soil, tend to decrease intermittent fever among residents thereon; (7) in the cure and prophylaxis of intermittent fever, those remedies are useful which lessen torpidity, and tend to increase the power of the body to re-act promptly to insidious changes in atmospheric temperature; (8) the slowness of the pulse, and other indications of torpidity, associated with retention of bile or with certain disturbances of the functions of the liver, are well known; but, so far as known to the writer, these conditions have not heretofore been considered as causative of the fever in the manner herein suggested.

SCIENTIFIC NEWS IN WASHINGTON.

Rock-Gas and Related Bitumens. — A Diagram of the World's War-Vessels. — The Eastern Cherokees. — Some Habits of Koreans.

Rock-Gas and Related Bitumens.

IN a communication (the second on the list) presented before the Philosophical Society on Feb. 2, Mr. W. J. McGee pointed out, that, *pari passu* with the industrial development accompanying the utilization of rock-gas, geologic science has made an unparalleled stride within a few months. When exploitation for gas began in Ohio in 1886, the geologist found himself utterly unable either to guide the efforts of the prospector or to predict the results of his work; yet within the ensuing two years the laws governing the accumulation and distribution of gas and oil have been so fully developed that the rock-gas problem to day claims a solution as satisfactory as