

more protected from the weather, and hence less liable to corrode; (4) the contact surface is more thoroughly protected from sleet and snow; (5) the construction is self-cleaning, and as there is a much greater space between the lower portion of the third rail and the tie, there will be less danger of an accumulation of snow, ice, and rubbish, and consequently less leakage."

In an editorial notice the journal above quoted expresses the opinion that no little interest will be created in the railroad world by the decision of the New York Central to use this new form of third rail. It says:

"The under-contact third rail has been suggested before, but the system has never been worked out, or at any rate tried out, before. The principal objection which has been raised to this form of construction in the past has been the difficulty of designing a satisfactory system of switches and crossings, but this seems to have been more theoretical than actual. In other respects the system certainly possesses a number of advantages over the ordinary type of third rail, even with a protecting cover, and the adoption of the system by such a large corporation as the New York Central, and upon such an important scale as will be involved in this company's 'electrical zone,' promises to settle for all time the relative advantages of the two systems of third-rail contact."

VEGETABLE JUICES AND TUBERCULOSIS.

IT has recently been reported by Dr. John F. Russell, of New York, that he has successfully used the juices of fruits and vegetables in the diet of tuberculous patients. The wide announcement of this fact in the daily press as "a new consumption-cure" calls forth a word of protest from *The Medical Record* (New York, September 2). Says this paper editorially:

"Dr. Russell has not found a 'new cure' for consumption, nor even a 'new consumption-remedy,' as one of the medically sanest of the metropolitan papers labeled it, nor do we believe that he would authorize such a designation. He has simply found what may prove to be a useful adjuvant in the therapeutic management of this disease, and only harm can come from calling it a cure or even a remedy. He has for some time been treating tuberculosis along the recognized lines of hypernutrition and fresh air and has met with a fairly satisfactory measure of success in a class of patients to whom the sanatorium treatment is not available. Meeting, however, with certain cases of the apparently curable type in which ill success attended his best efforts, he was driven to the conclusion that there was an unknown something lacking in the prescribed diet of proteids, hydrocarbons, and carbohydrates, the want of which retarded or prevented the cure. This unknown something he was led to believe, by some process of reasoning which the published report does not explain, to be vegetable juice. The lack was supplied by the addition to the diet of the expressed juices of all the vegetables in the market and also of apples and pineapples."

That this addition to the dietary is theoretically sound is acknowledged by the writer, who quotes from Fernie's book, "Meals Medicinal," the statement that the constitution of vegetable foods is "altogether of a building-up character, as distinguished from animal life (which involves excretions of the broken-down products as part of its being)." It is possible, he thinks, that the raw vegetable juices may be just what is needed to insure assimilation of the proteids, carbohydrates, and fats contained so abundantly in the dietary ordinarily prescribed for the consumptive. To quote further:

"Dr. Russell claims (or is said to claim, in the newspaper reports) to have had eleven 'cures' of pulmonary tuberculosis since January 7, when he began to add vegetable juice to the dietary of his patients. We hope he did not really make such a claim, for it is only a wild optimist who would pronounce any consumptive cured in six months, and an assertion of this sort only throws discredit on the reasonableness of the one who makes it. The patient may have taken on flesh, the cough and fever may have ceased (temporarily), and the tubercle bacilli may have disappeared for a time from the sputum—but a 'cold' may bring them all back next

week. It is claims such as this, made by physicians, which justify the headlines of the lay press in announcing the discovery of infallible cures, and raising false hopes in the minds of the incurably ill. It is possible, and we hope it is true, that Dr. Russell has discovered an aid to assimilation which will be an adjuvant to the recognized methods of treatment of tuberculosis, but that is the most that can be tentatively admitted, and even that remains to be proved."

THEORIES OF THE UNIVERSAL ETHER.

THAT scientific men should spend not one, but many lifetimes in trying to work out the mechanical constitution of a substance whose existence can not be demonstrated by the direct evidence of any of the senses, is certainly a striking fact. The reasons why they feel obliged to do this, and the degree of success that has been reached, are stated in the following editorial paragraphs in *The Electrical World and Engineer* (New York):

"The universal ether has never possessed any experimental right to exist. No one has ever yet seen, felt, or tasted it. It is probably correct to say that there is not a single observation or recorded experiment which brings the ether home to our senses as ether. Nevertheless, we all believe that it exists, because our minds can not grasp action across a void, and in order to make our mental conceptions work, we are obliged to create a something out of nothing. We can not imagine, for example, that the sun's light, which we know by observation takes about 500 seconds to reach our planet, 'does time' in empty space, or spends these 8 minutes in nothing—doing nothing. Again, the space within a highly exhausted glass tube can not, in our minds, be regarded as empty of everything; for if we place the tube inside an electrically excited solenoid, we can ascertain that magnetic energy exists in the tube. 'We are unable to think that magnetic energy can exist in nothing. To meet these and numerous like difficulties, the ether has been invented."

"Once having adopted the ether, its duties develop at an astonishing rate. It has to fill all space, or stretch out to infinity in all directions, without any holes or blank cavities. It must permeate all substances to the innermost, more thoroughly even than water permeates a submerged sponge. The motion of matter must give rise to no displacement in the permeating or environing ether. The ether must be capable of absorbing electric and magnetic energy, and of transmitting gravitational stresses. Electromagnetic energy must be propagated through it at a uniform and definite speed. All of these properties must be everywhere the same—to ranges of billions of miles, so that the ether in which the earth floats next year must be, within measurable limits, identical in behavior to the ether in which the planet floats to-day, for the entire solar system is supposed to shift its position in space by half a billion miles per annum. It must be admitted that an ether which can do all this is a very remarkable entity. Speculations as to what it can be like have been ripe for many decades. Some estimated that it was jelly-like. Others preferred to suppose it made up of distinct grains like extremely small shot. The astronomer wanted one kind and the electrician wanted another. Some scientists postulated for it a rigidity much greater than that of steel, together with a tenuity much below that of the rarefied gases in a Crookes tube."

The occasion for these remarks is a paper contributed to *The Journal of the Franklin Institute* (Philadelphia, July) by Prof. W. S. Franklin, in which the writer discusses the propagation of electric waves on a theory of the ether propounded many years ago by the English physicist Clerk Maxwell. Maxwell supposed the ether to consist of contiguous spheres that rotated one upon another like cog-wheels, and from this hypothesis he deduced very ingeniously many of the properties described above. Professor Franklin finds that this theory helps to account for the behavior of electric waves over wires. Unfortunately the theory is merely a mechanical symbolism, which aids the mind in understanding, without professing to represent, actuality. Is it permissible to use such a theory? The writer in *The Electrical World and Engineer* believes that it is. He says:

"It may be permitted any honest man to doubt the existence of

this cog-sphere ether, without being guilty of heresy. We do not suppose that Maxwell ever believed that the ether was built up of alternate positive and negative cog-spheres. As to the real nature of the ether, we are as much in the dark as ever. But if the Maxwell theory offers an ideal machine whose actions can be followed in imagination to a final result, which is the same as that of the actual but unknown machinery, we are justified in using the ideal mechanism merely to assist our ideas. It does not follow that, because we consider the actual mechanism is different from the ideal mechanism, we must avoid all use of the latter as a tool. This is Professor Franklin's position as we understand it."

THE ARCTIC AS A HEALTH RESORT.

IT has been proposed by a physician of Washington, D. C., Dr. I. Sohon, to take a party of consumptives to the arctic in search of health. Dr. Sohon has been with Peary to Greenland, and was struck while there with the suitability of the arctic regions for the climatic treatment of tuberculosis. He writes on the subject in the *Washington Medical Annals*, and what he has to say is thus abstracted and commented upon in *The Medical Record* (New York):

He believes that a summer spent in Omenak Fjord or Inglefield Gulf, in Greenland, would serve to establish a cure, or insure its accomplishment afterward, in nearly all cases in which the disease is not already completely overbalanced by septic complications. Four tuberculous patients who have gone to these places have been cured promptly and effectually. In other words, 100 per cent. in four cases have been cured. This evidence is not conclusive, and still this list includes all the known cases. The natives of Northern Greenland do not have tuberculosis, altho there has been ample opportunity for infection from visiting whites. The greatest single drawback in the treatment of tuberculosis is the continual occurrence of unavoidable exacerbations of a catarrhal, pneumonic, or septic nature. Catarrhal conditions do not exist in the arctic, and septic bacteria are not native. In the summer months all life is forced and stimulated; men and animals quickly recover from the winter anemias, and there is just such a forcing of vitality that consumptives especially need. Patients here would be removed from all influences which favor an extension of the disease or militate against an improvement. The never-setting sun uninterruptedly imparts energy; the atmosphere is dustless and sterile; there is entire freedom from danger of colds and other ills which cause setbacks. The sailing distance from New York to the extreme end of Baffin Bay is about half that between New York and Europe, and from the northern railroad connection at Sydney, Nova Scotia, to the arctic circle the distance is approximately that between Boston and Key West. The waters are usually smooth. From the zeros of the mornings in May there is a constant rise of temperature until past the midday, or, as we should say, midsummer, and then a decline toward the evening in September. During most of this long day the temperature is above the freezing-point, and rises in the forties and fifties after the snow melts in the spring and the rocks are sun-warmed. The usual fluctuations in any twenty-four hours do not equal the changes which occur in the single hour following our sunrise and sunset. The question of a proper food supply in the Far North is not radically different from the same question here. In that region the time required for a cure of tuberculosis is far shorter than in other climes, and so the summer voyage might suffice; at least it would lay a good foundation for a permanent cure. The writer urges that consideration be given to the dedication of a hospital-ship for the purpose of carrying patients to the favored spots in the North which hold the complete essentials to a cure. Here is an opportunity, he thinks, for some philanthropist to give a sum sufficient to purchase and equip a vessel for an experimental voyage to the North."

It was announced in the early summer that Dr. Sohon's plan was actually to be carried out, and the scheme progressed so far, at least, as the sending of an agent to Halifax to negotiate a charter for a vessel, but whether or not the party was organized and actually set sail for Greenland the writer of the notice in *The Medical Record* is unable to say.

FACES AND OCCUPATIONS.

"THAT man looks just like an actor;" "I should say he was a grocer's clerk"—these and similar assertions are common enough, and seem to indicate a popular impression that a man's occupation may or ought to be told by a glance at his face. That disease has its effect on the physiognomy every physician knows. A skilful diagnosis is often made from a study of the patient's face, and we have the authority of an editorial writer in *The Lancet* (London) for the statement that occupation has undoubtedly a similar influence. He says:

"Associated with the various occupations in life there is undoubtedly a type of face which more or less betrays the calling of its owner. Medical men, especially in hospital practise, find acquaintance with these types valuable. They may not be able, with the shrewdness of Sherlock Holmes or of his still acuter brother, to read a man's past, present, and future by a glance at him in the street, but they are able to gauge with considerable accuracy how far the history of the case, as given by the patient, is a truthful one, and how far it fits with his probable occupation in life. Calling must certainly have some influence over the physiognomy of the cabman, the omnibus driver, the butler, or the groom; each frequently possesses a type of face which wears so characteristic an expression as to make it not difficult to identify the vocation accompanying it. We speak also of the legal face, the scientific face, the ecclesiastical face, the musical face, and artistic face, the dramatic face, and the military face. This is merely a broad classification, but we disbelieve in the claims of the keen observer to an ability to differentiate to a finer degree. We have heard of hospital physicians who claimed to be able to say from a glance at the face that this or that man was a butcher, a grocer, a bank clerk, a lawyer's clerk, a commercial traveler, a stock-broker, a wine merchant, and so on. We think that the fame of these medical men as rough-and-ready detectives has been largely manufactured for them by enthusiastic clinical clerks; but that many medical men do possess great insight into the occupations of those who come before them is a truism. The question is often debated whether physiognomy is a growth of vocation or whether it shows that the vocation chosen is in accordance with the particular capacity and ability of the person to whom it belongs. In other words, if the barrister does not show the 'legal face,' the aspiring priest the 'ecclesiastical face,' the medical student the 'physicianly face,' the soldier the 'military face,' and so on, is that a sign that they have mistaken their calling? Is the man who 'doesn't look a bit like a doctor' likely to fail because his physiognomonic qualification is wanting? Or will he, whatever his original features, gradually come to acquire the type of the profession to which he belongs? The answer to the question is, of course, that both theories are right. A certain kind of face, the so-called scientific face, is so often seen among modern medical students as to prove that the owner of that cast of countenance is likely to adopt medicine as a career. Conversely, whatever the original cast of features a medical man may have possessed, the anxious, delicate, and absorbing work of medical practise will put a stamp upon them."

SCIENCE BREVITIES.

To judge by the number of asylum cases, insanity in Canada has increased 25 per cent. since 1891. In that year, according to the *Montréal Medical*, the insane-asylums of the Dominion contained 13,342 cases out of a population of 4,719,891. To-day 16,662 lunatics are kept under restraint in the various institutions, and the population is not more than 5,318,606. The periodical attributes the alarming increase in the number of the demented to immigration and the laxity of medical inspection at the various ports, which is said to be a mere formality. It asserts that 699,500 immigrants have entered Canada in the last ten years, of which 3,000 were either partially or wholly insane.

"PRINTING telegraphs require a high degree of fine mechanical skill for their construction and maintenance," says *The Scientific American Supplement*. "Skill of that kind does not exist in new countries, and it is only recently that one or two printing telegraphs have reached the stage at which it pays telegraph administrations in these new countries to import and cultivate such skill. These big new countries are essentially rough and ready, and for the rough-and-ready stage of civilization nothing can beat the Morse key and sounder. Even the United States is only now emerging from this rough-and-ready stage of national existence, at any rate so far as telegraphy is concerned, and it is the opinion of those who are in a position to judge, that there will be a great development of printing telegraphy in the United States within the next ten years. The conditions are at last ripe for the change. Saving of wire owing to the great distances in America is important, and saving of labor owing to the high wages is a factor not to be neglected."