

Mr. Crocker points out. There seems in the list no practical battery that will give a horse-power hour for less than twenty cents, — an enormous price compared with the cost of electric energy from a dynamo. One thing must be borne in mind: the cost of materials is obtained from price-lists of chemical companies, and would be materially decreased if the substances were made in large quantities. It will be seen that it will be impossible, however, to reduce the prices, just at present, to compete with a dynamo supplying energy at less than one cent per horse-power hour: so, while primary batteries have an important and extended field for telephonic purposes, telegraph-lines, bells, etc., they can hardly succeed in the more serious work of supplying power and light.

THE SEEL INCANDESCENT-LAMP FILAMENT. — A patent has just been issued in this country for an incandescent-lamp filament which is both novel and successful. The following is the method of preparation: threads of cotton, silk, or other vegetable fibre are steeped in a solution consisting of a silicate or salt, gum-senegal, and caustic soda, and then rolled between warm grooved rollers. The thread is then carbonized in the usual manner. To regulate the resistance of the resulting filament, it is placed in a vessel into which melted paraffine is run, and when the latter hardens an electric current is sent through the filament. As the thread heats, part of the paraffine nearest to it is liquefied, and, as the heat becomes more intense, carbon is deposited on the filament, the solid outer shell of the paraffine preventing any air from getting to it. The resistance gradually decreases as more carbon is deposited. When it reaches its proper value, the current is cut off, the whole of the paraffine melted, and the thread removed. The gum-senegal completely fills the pores of the filament, making it very strong, while the silicate and caustic soda surround the inner core. We have, then, three layers, — the central carbonized thread, the silicate, and the outer layer of deposited carbon.

THE CARRIÈRE ACCUMULATOR. — Several attempts have been made to produce a secondary battery in which the supports are of carbon instead of lead. A great difficulty in the present types of secondary battery lies in their excessive weight, caused to a great extent by the plates used as a support for the 'active' material, the inactive support-plates sometimes making up half the weight of the complete cell. Carbon would, for some reasons, make an excellent support for the active material: it is light, a good conductor, and it is not attacked by the acid in the cell. It has been found, however, that carbon plates will quickly disintegrate when used for battery purposes. If the active material is in cavities in the carbon plate, the expansion on discharge will gradually disintegrate the plate; while, if it is applied on the surface, it will soon drop off. M. Carrière makes his plates especially dense and hard, and, after applying the active material, he puts them horizontally in a cell with cocoanut-fibre between the plates. Whether this peculiar disposition of the plates and their special construction will be effective, can only be determined by experiment.

HEALTH MATTERS.

Wear and Tear of the Medical Profession.

THE State Board of Health of Illinois has recently published a tabulation and analysis of a mass of material which has been accumulating during the past ten years, bearing on the wear and tear of the medical profession of that State. This report, which is written by Dr. John H. Rauch, the able secretary of the board, is a most valuable contribution to the subject, and brings prominently to view the dangers incident to a medical life. Dr. Rauch says that for more than ten years he has been impressed in a general way with a conviction that this wear and tear was underestimated; that the active practice of medicine was not so conducive to longevity as is popularly supposed, nor as writers on such subjects, basing their conclusions on the data obtained from medical biographies, cyclopædias, etc., had been led to believe.

The source of error in this latter instance is obvious. The subjects of biographies, cyclopædia articles, memoirs, etc., are necessarily the men who have attained eminence, or at least prominence; and, in the nature of the case, prominence in the medical profession

is largely the fruit of long service and length of days. In other words, the exceptional class which, partly by very reason of long life, has attracted most attention, has been hitherto taken as an indication of the longevity of the profession as a whole. Thus we find one writer (Dr. George M. Beard) citing the deaths of 490 Massachusetts physicians whose average age at death was 57 years, and 35 out of every 100 of whom attained to 70 years. The average age of the subjects of Gross's 'Medical Biography' was 59 years, although it is ingenuously added that these "included several who died before their prime." Similarly Thacher's 'Medical Biography' makes mention of 145 physicians, and the fact that their average age at death was 62.8 years is quoted — as are the other instances — as proof of the longevity of medical men. Still another fact should be taken into consideration in the case of the class who figure in biographies. It is composed very largely of city physicians, and of the men who, in the smaller towns, are in a position to select their practice and adjust their labors with some regard to regular hours of sleep, meals, and relaxation. Comfortably housed at home, properly protected from the weather when making visits, free from the harassing cares of the *res angustæ domi*, and beyond the torturing anxiety which too often besets the struggle for practice, — the conditions of life in these cases are undoubtedly favorable to longevity. But these are the fortunate few, who bear no more numerical relation to the rank and file of the profession than the general officers do to the rank and file of an army.

Compared with these biographical subjects, upon whose length of honorable and successful years is predicated the assertion that the wear and tear of the profession does not prevent its members from attaining a high average longevity — compared with these, Dr. Rauch has, as the result of an extensive correspondence and systematic record, obtained data which show that the average age at death (in Illinois, at least) is not much over 52 years; and that only about 11, instead of 35, in every 100 attain the scriptural limit of threescore years and ten.

In older communities it is entirely probable that this rate may be exceeded. In Massachusetts, for example, the average age at death of 1,166 physicians, occurring during a period of nearly thirty-two years, is given as about 55 years; but the Illinois statistics — collected with painstaking care, and dealing with more than double the number living annually — do not furnish any such favorable result. To a very great extent the discrepancy between Illinois and Massachusetts is due, no doubt, to the different conditions which obtain in the two communities, — the one a comparatively newly settled State, with a population containing less than the normal proportion of the middle-aged and beyond; the other, one of the oldest settled commonwealths, with an excess of ages beyond the middle life, and with what Dr. Holmes calls the "adjustable conditions of living" so perfected as to materially conduce to the prolongation of life. But in addition to this difference there must also be taken into consideration the radical difference in the modes of collecting the data upon which the average age at death has been computed.

For Illinois these data have been obtained through official relations with an aggregate of some 14,000 physicians during a period of over ten years. The *personnel* may be taken as fairly representative of the profession generally, since it is composed of about one-sixth of physicians of a large city, Chicago, and the remainder of physicians of smaller cities and towns. During these ten years there has been an average of 6,000 living per annum, and the aggregate deaths have been about 800, or an annual death-rate of 13.3 per thousand. These round numbers and the period covered are cited to show that the data are extensive enough to insure substantially trustworthy results in the tabulations and deductions.

An examination of the tables shows, that while the death-rate of physicians in Illinois for the first few years after entering upon the practice of medicine is lower than that of all males in Illinois, and greatly less than that of the whole population of the country at large, it increases beyond that of the former class during the decade from 40 to 50, and is greater than that of the latter class in the next decade.

The obvious inference is, that physicians, on entering practice, form a class of selected lives, since they have an advantage of nearly 3 per cent as compared with all males at the same ages, —

that is, from 24 to 40, — and of over 50 per cent as compared] with the total population, both sexes, at the same ages; this latter great disparity being no doubt largely due to the casualties among women during the child-bearing period. As the wear and tear of practice begins to tell, this advantage is soon lost; so that during the period from 30 to 70 the death-rate of physicians is 8 per cent greater than that of all males, and during the period from 40 to 70 it is more than 11 per cent greater than that of both sexes.

An examination of the causes of death reveals the result of the exposure, irregular hours, broken rest, and mental anxiety which are the lot of the average practitioner.

In the grouped causes of death it is seen that consumption, diseases of the respiratory organs (including 91 from pneumonia), and Bright's disease caused 268 deaths, or more than one-fourth of the total. If to these be added a share of the deaths from diseases of the heart, — the *sequelæ* of rheumatism, — a fair estimate may be made of the effect of exposure to the vicissitudes of weather upon the wear and tear of medical life. As a result of mental strain and anxiety, of insufficient, irregular, and interrupted sleep, and similar causes, is the total of deaths from diseases of the brain and nervous system, embracing 43 from various forms of paralysis. In the group of zymotic diseases (enteric fever given separately) there were 5 deaths from diphtheria, 1 each from small-pox and yellow-fever, and 8 from traumatic infection (septicæmia, etc.), all contracted from attendance upon patients.

Less creditable to the *morale* of the profession are the 18 deaths from over-doses of opiates and narcotics, the 7 admitted suicides, and the deaths from alcoholism, direct and indirect, — 12 of the former, and at least 8 of the latter. There is this to be said, however, in this connection: that the proportion of mortality from these causes is steadily diminishing; and my observation shows that this diminution is largely the result of an amelioration of the conditions, especially of country practice, due to better roads and methods of locomotion, increased comfort in living, and less physical strain upon the practitioner. Ten years ago the resort to stimulants upon exposure to the weather, and under the harsher conditions of practice which then obtained, was much more common than it is to-day. And this is also true of the use of opiates and hypnotics. The practitioner, familiar with their power to temporarily stimulate to further endurance, or to produce sleep when nervous and exhausted, had formerly greater temptation to resort to the use of these agents, always ready to hand.

While there is a total of 12 deaths reported during the ten years as due to alcoholism direct, there has been only one in the last four years; and of the 18 deaths from over-doses of opiates and hypnotics in the entire period there has been only one in the last three years. In addition to the amelioration in the conditions of practice as a cause of this result, it is only fair to take into consideration also the improved moral status of the profession in this State.

Although the figures and deductions here submitted are believed to be substantially accurate, — being, if any thing, understatements, — they are offered only as a provisional contribution to the study of the subject, which is by no means exhausted. The numbers under observation, and the period covered, are greater than any thing heretofore utilized for this purpose in this country, so far as I am aware, and have cost much labor, which may be materially lightened in the future by very little effort on the part of physicians in making returns of death certificates, and by county clerks in forwarding them to the office of the board. It is hoped that the interest which this presentation of the subject may reasonably be expected to arouse will lead to this result.

CARPET-BEATING IN PARIS. — The Conseil de Salubrité of Paris has prescribed the following conditions under which the beating of carpets will be permitted in the city. The carpets must be brushed and beaten in entirely shut-up rooms, and the dust deposited on the floor will be washed with water containing some disinfectant of potent action. Strips of wool, etc., must be burnt immediately. This action has been taken because of the nuisance caused by the beating of carpets in the open air in the built-up portions of the city, and because of the danger which is believed to exist, due to the fact that many of the carpets come from houses in which contagious diseases have prevailed, and that in the process of beating and shaking the germs are dislodged.

BOOK-REVIEWS.

Discovery of the Origin of the Name of America. By THOMAS DE ST. BRIS. New York, Amer. News Co. 8°. 50 cents.

IT seems almost as if the sober historian owed his thanks to a class of half-learned wanderers on the outskirts of historical studies, for keeping up with the unthinking a certain factitious interest in early American history, and so to produce readers, who in the end learn to distinguish the limits of historical evidence. One of these happy enthusiasts fabricates as a designation for the precipices of the Hudson the words *L'anormée berge*, and of course finds Norumbega along the Palisades. Another finds a rock in a river, — it is so unusual to find rocks in rivers, — and places Leif's-booths in Old Cambridge, Mass. Another finds 'Amerique,' or something else, attached to a mountain, or presumably attached, and thinks Vespuccius is a humbug. Another finds a Peruvian tribe called by something that sounds like 'America,' and says that the New World was named in that way, it being no matter that the name 'America' was in use for the new continent years before Peru was discovered.

The latest of these whimsical revellers finds, that, after all, Columbus received his reward in having the name of his continental 'find' evolved from 'Amaraca,' — the spot, as he says, where the great navigator first struck the mainland. This last writer has printed a thick pamphlet called 'Discovery of the Origin of the Name of America, — the Most Illustrious Aboriginal National Name of the Continent, by Thomas de St. Bris,' — and undertakes gravely the more difficult task of convincing others, after he has accomplished the far easier one of convincing himself.

The new interest in the study of American history must be accepted, we suppose, with all its train of erratic followers. New interests are always handicapped with such impediments. It is useless to follow Mr. St. Bris in all his gyrations. When he refers to the authority of Wald-see-Müller, and his story of the application of the name of 'America' as history accepts it, there is something delicious in his saying "that ideas of that age were often printed without the slightest reason." We wonder if Mr. St. Bris ever heard that the Spanish Government never recognized during the age of discovery any name for the New World but the 'Indies,' when he tells us that "Charles V., one of the most famous monarchs of the world, gave his western hemisphere one of the most illustrious names of antiquity!" Mr. St. Bris has got yet to learn the alphabet of historical research.

Report of the Dairy Commissioner of the State of New Jersey, 1887. Trenton, State. 8°.

WE have had occasion in the past to congratulate the people of New Jersey on the fact, which we think is generally conceded among sanitarians, that the reports published by the board of health of that State occupy the very first rank in the reports of State boards of health; and that the work done by that board in improving the sanitary condition of the State, not alone through the instrumentality of beneficent laws, but also largely through the educational influences set at work by the State board, is of the highest order, and cannot but be of immense value to the State, both in improving the health of its people and the value of its property. To Dr. E. M. Hunt, the secretary of the board, more than to any other one man, is this due. Equally worthy of commendation is the work of Dr. William K. Newton, the dairy commissioner of the State. The report of this officer, which is before us, is the second which has been published. It deals with the subject of oleomargarine, the sale of which is prohibited in the State, unless the seller informs the purchaser what the article is, and presents him a printed notice bearing the name of the article, with milk, and with foods and drugs. Penalties for the violation of the law to the amount of \$3,100 have been received during the past year. In the prosecution of those who furnish impure or adulterated milk, \$3,900 have been collected in fines. The report contains a number of interesting special reports, among which are the following: 'Testing for Color in Oleomargarine;' 'Lard, its Adulteration and Detection;' 'Condensed Milk;' 'The Composition and Methods of Analysis of Condensed Milk,' by Prof. H. B. Cornwall; 'Honey and its Adulteration;' 'Analysis of Adulterated Honey,' by Shippen Wallace; 'Vinegar