SCIENCE:

A WEEKLY NEWSPAPER OF ALL THE ARTS AND SCIENCES.

PUBLISHED BY

N. D. C. HODGES,

47 LAFAYETTE PLACE, NEW YORK.

SUBSCRIPTIONS.—United States and Canada.....$3.50 a year.
Great Britain and Europe..... 4.50 a year.

Communications will be welcomed from any quarter. Abstracts of scientific papers are solicited, and twenty copies of the issue containing such will be mailed the author on request in advance. Rejected manuscripts will be returned to the authors only when the requisite amount of postage accompanies the manuscript. Whatever is intended for insertion must be authenticated by the name and address of the writer; not necessarily for publication, but as a guaranty of good faith. We do not hold ourselves responsible for any view or opinions expressed in the communications of our correspondents.

Attention is called to the "Wants" column. All are invited to use it in soliciting information or seeking new positions. The "Exchange" column is likewise open.

VOL. XIV. NEW YORK, OCTOBER 18, 1889. No. 350.

CONTENTS:

THERE IS LITTLE to chronicle this week of the progress in the plan for a world's fair in this city in 1892. The executive committee, composed of members of the various committees who have had the work in charge, and the sinking-fund commissioners, met on Monday and organized. Among the messages received was one from Joseph Pulitzer, subscribing $50,000 outright, and offering to be one of twenty-five to subscribe $100,000 each. The work of getting the property-owners within the limits of the proposed site to give the use of their land on any terms can be said to make practically no progress, as was to be expected. Meanwhile the Chicago committee, who want to see the fair in that city, urge in every way the claims of that city. They will have it, that, as Chicago is nearer the centre of population in this country, it will be more accessible for Americans, who will be those most largely represented as visitors and exhibiters. Then, again, the question of site is not a troublesome one for Chicago. It cannot be said that New York has down much yet to secure the fair, and it is certain that Chicago is making a good deal of noise; so that, unless there are some tangible results to show in New York, the popular verdict may soon be in favor of the Western city.

REPORT OF THE COMMITTEE OF THE NEW YORK STATE MEDICAL SOCIETY ON THE CAUSES AND PREVENTION OF BLINDNESS.

TWO years ago a committee was appointed by this society to investigate the question of blindness due to contagious ophthalmia in this State and in the United States, and to recommend means for its prevention. The importance and extent of the subject were so great, that at the meeting one year ago it was only possible to report progress, and ask that more time be given for the work. This was rendered necessary also by the fact that our lamented colleague, Dr. Agnew, was unable to render the valuable assistance upon which we had counted; and only recently has his place on the committee been satisfactorily filled. Even now it seems advisable to give a synopsis of the more important features of the subject, instead of attempting to go into many details which are not only of interest to the ophthalmologist, but also of importance from a sanitary point of view. The reasons for this investigation concerning the increase of blindness will become apparent if a statement is first made of the statistical facts. In presenting these it will be necessary to repeat to a certain extent the statements made in a paper by the chairman of this committee, which was published in the "Transactions of the American Ophthalmological Society" in 1887. As far as we are aware, however, these statistics have not been stated in a similar manner anywhere else. When we compare the report of the United States census of 1870 with the report of 1880, we find the population of the United States in 1870 was 38,558,371, and the number of blind then was 20,320; whereas the population in 1880 was 50,155,783, and the number of blind was 48,929: in other words, while the population of the entire country had increased 30.09 per cent, the number of blind had increased 140.78 per cent.

It is worth while, in passing, to call attention to the distribution of the blind throughout the country, and in doing so to quote the figures in the paper already mentioned. If the United States be divided into three parts, according to latitude, — the first or southerly range of States including those which lie below the 35th parallel, the second range between the 35th and 40th, and the third above that, — we find there is a constant increase in the ratio as we pass from the north toward the south. Thus there are, in the northerly range of States, 7.9 blind in each 10,000; in the middle range of States, 9.42 blind in each 10,000; in the southern range of States, 10.81 blind in each 10,000.

There is another classification of the States which is also of some interest. If they be divided according to longitude into three groups, each of which includes about fifteen degrees, we find the proportion of blindness decreases as we go from east to west. According to this division, the first group of States would lie between the Atlantic Ocean and the Mississippi River, extending to about the 15th degree of longitude west from Washington; the second would be from the Mississippi to the Rocky Mountains, or from the 15th to the 30th degree; while the third would include the strip from the Rocky Mountains to the Pacific Ocean, or from the 30th degree of longitude west. Here we find, in the easterly range of States, 10.34 blind to each 10,000; in the middle range of States, 7.90 blind to each 10,000; in the western range of States, 5.68 blind to each 10,000.

So much for the statistics relating to the United States as to the number of blind, their increase throughout the country as a whole, and their distributions in different parts of it.

Let us next consider the statistics which are available relating to New York State alone. The population in New York State in 1870 was 4,382,759, and in 1880 was 5,082,871, being an increase of 15.9 per cent; whereas the number of blind in New York State in 1870 was 2,213, and in 1880 was 4,981, being an increase of 125.07 per cent.

In a similar manner, if we compare the State census of 1875 with the United States census of 1880, we find the population in 1875 was 4,698,958, and in 1880 was 5,082,871, being an increase of 8.1 per cent; while the number of blind in 1870 was 2,256, and in 1880 was 4,981, being an increase of 111.03 per cent: in other words, the official reports show, that, during the ten years preceding 1880, blindness in the State of New York increased 8.2 times as

rapidly as did the population, and during the last five years of that decade it increased 13.7 times as rapidly.

It may be interesting also to glance at the distribution of blind throughout the State of New York. The tenth United States census gives for the first time the number of these unfortunates in the different counties of each State. These statistics are in process of publication; but, as that portion of the report was not complete when this one was being prepared, application was made to the State Board of Charities, where there is deposited a copy of the official returns relating to the bliud. The assistant secretary of the board, Mr. James O. Fanning, has kindly furnished the committee with the number of blind in each county, having ascertained that by adding the lists of more than five thousand names on record. The different counties have been arranged in four groups. The first includes those which contain less than .005 of one per cent; the second, those which contain from .005 to .01 of one per cent; the third, those which contain from .01 of one per cent to 5 per cent; the fourth, those which contain more than .0521 of one per cent.

In view of these rather startling assertions in regard to the increase of blindness, it is natural that we should question the correctness of the data which lead to any such conclusions; in other words, to suspect that the apparently rapid increase was due to the difference in the manner in which the statistics were collected in 1870 as compared with 1880. In the compendium of the "Tenth Census" it is stated by Mr. Wines, who has charge of that department, that the plan was essentially the same; but, in order to satisfy ourselves more thoroughly, a letter was addressed to the secretary of the interior, asking for any additional facts in regard to this point, and we were informed that the same outline was followed in one case as in the other, simply a special blank for the blind being filled out in 1880. Of course, these examinations were by no means as accurate as would be desired from the ophthalmological point of view, for the numerators were often ignorant and careless men; but the fact remains that the errors were probably almost as great in 1870 as in 1880. Moreover, in order to verify the accuracy of some of the figures in the last census, we made application for the returns regarding the city of Buffalo; and while a number of changes of residence were made, and it was difficult to verify the reports in detail, still the information obtained, as far as it went, showed that at least that part of the report was quite as reliable as could be expected.

Let us consider next the causes which tend to make this apparent increase of blindness. In doing so, it is natural that we inquire, first of all, what were the causes which have produced that condition among those who are already blind. To determine this, it seemed advisable to undertake the examination of a considerable number of these unfortunates, and, of course, that could be done most conveniently in asylums, almshouses, where they were collected together. Accordingly a list of questions was prepared, being mainly a copy of that which was used by Hugo Magnus, a specimen of which is here appended; the name of the blind-asylum, location, date of the examination, and name of the examining physician, heading the list. 1. Name of the blind person, residence; name of father or guardian, residence. 2. Sex. 3. Age. 4. Religion. 5. Nationality. 6. For adults, occupation before blindness; for children, occupation of the parents. 7. Color of the hair. 8. Color of the iris, if possible. 9. Degree of blindness: A. Count fingers at $\frac{1}{8}$ of a metre; B. Quantitative perception of light; C. Absolute amaurosis. 10. Cause of the blindness of the right eye. 11. Cause of the blindness of the left eye. 12. Condition of the right eye. 13. Condition of the left eye. 14. Age at which right was lost. 15. Age at which left was lost. 16. Can the blindness be referred to scrofula? 17. Can it be referred to syphilis? 18. Is the blindness the result of any disease of the general system? 19. Are there any other bodily infirmities? (For those who have had small-pox) 20. Was the blindness before vaccination? and 21. Was the vaccination effectual? 22. Did the blindness occur when in a town, or when in the country? 23. Were the parents related to each other? 24. Did the parents have normal vision? 25. Were any of the relatives blind? 26. Were there any other circumstances which might be important in connection with the case?

To the president of each county medical society we then forwarded as many of these blanks as there were blind inmates of his county almshouse, and the request was made that the blanks be filled and returned to the chairman of this committee. Responses were returned in only nineteen instances, although letters with blanks were sent to all. Unfortunately, also, the answers to some of the questions were so indefinite that it was necessary to omit the cases from the classification.

A second set of examinations which the committee have to acknowledge was made by Dr. W. H. Bates of New York, acting under the supervision of Dr. H. D. Noyes. This list includes one hundred and sixty-eight cases seen at the New York State Institution for the Blind in New York. The third list contains the results of an examination of one hundred and twenty-eight inmates of the New York State Institution for the Blind at Batavia. These examinations were made by the chairman, assisted by Dr. Elmer Starr of Buffalo.

In spite of this plan of inquiry, it is difficult to determine exactly some of the causes of the blindness, even when the greatest care was exercised; but it was evident from even the most casual examination that a very large percentage of the cases were due to some form of contagious disease of the eye. It must be admitted that in the case of blind-asylums this representation, however truthful in itself, has a tendency to exaggerate the importance of the contagious disease of the eye as a cause of blindness. We do not find at such an institution those who have become blind by accident to adult life, or by those diseases which are more common in old age. A table of percentages is given by Magnus in his admirable work on blindness, in which he brought together the results of examinations by different investigators, which covered a total of 2,528 cases of blindness. In this table it may be seen at a glance how very great is the influence of those diseases which are distinctly of a contagious kind as compared with any other, over 20 per cent of those of all ages being due to contagion. In the "Annual Report of the Manhattan Eye and Ear Infirmary for the Year 1886" is given a summary of 48,509 cases, of which it was shown that 26 per cent were due to conjunctival diseases, and 25.5 per cent to corneal diseases; but one of those who made this report, when speaking of them, mentions "over 50 per cent as being communicable, or closely related to communicable diseases." In summing up, therefore, this portion of the question as to what are the causes which have produced blindness, it is fair, we think, to reply that contagion exercises by far the most important influence.

There is another aspect of this part of the subject which it is necessary to mention: we have reference to the influence which immigration has upon the increase and spread of contagious diseases of the eye, directly and indirectly. A considerable number of facts might be presented to illustrate this phase of the subject. We need only select as an example the influence exerted by one class of immigrants in relation to spreading one disease of the eye. It is generally conceded that trachoma is essentially contagious, and also is of frequent occurrence among the lower class of the Irish population. Now, the report of the Treasury Department for 1886 shows that from 1871 to 1880 there were nearly half a million of Irish immigrants in this country, — more exactly, 444,589, — and during these years the Irish formed 15.1 per cent of all the immigrants who arrived in the United States. It should be borne in mind that by far the greater part of these immigrants — at least four-fifths of them — land at Castle Garden. In order, therefore, to ascertain what care was exercised in isolating any such contagious cases which might enter there, a letter was addressed to the physician in charge of the State Emigrant Refuge and Hospital at Ward's Island, New York, inquiring as to this point; and his replies, although frankly given, were by no means such as to impress one with the care which the authorities exercise as to the disposition of such cases.

Few persons appreciate how great is the cost to the community of the maintenance of a number of persons in their midst who are not only non-producers, but who must also be fed and clothed. It is possible to make an estimate of the annual cost to the State for the maintenance of the blind. Supposing they were all provided for in an economical manner, such as can be done in large institu-

tions: it is fair to estimate the cost of keeping each one at $2 per week, or $104 per year; to which should be added, for clothing, $28 per year, or a total cost of $132. These are the figures given in the report of the Perkins Institution, a Massachusetts asylum for the blind, in October, 1874. It must be remembered, however, that these individuals are not producers: they do not earn what they otherwise would; and this amount must be added to the cost. Taking the lowest estimate of a man's wages at $1.20 for each working day, supposing that not one among them all could become a skilled artisan, and counting the wages of the women at only 40 cents a working day, we find there is a total yearly loss to the community, cost and wages for each man, of $404, and for each woman of $256. This, at the very minimum estimate, amounted in New York, in 1880, to $1,682,136, and over $25,000,000 in 1888 for the entire United States.

If these statements are of as much importance as they would appear, it behooves us at least to inquire what steps can be taken for lessening the increase of blindness. In a paper like this it is possible only to refer briefly to points which are of primary importance, without attempting detail in any respect. At present, however, if we were to suggest a plan, it would be about as follows: —

First, To popularize with the profession and laity the necessity of some care as to the proper cleansing of the eyes of infants immediately after birth; to impress the importance of this matter upon nurses, hospital attendants, and others; and, if possible, to teach them to apply to every infant's eyes a suitable solution of nitrate of silver, which need never be stronger than two per cent, and of maximum quality.

Second, Enactments should be encouraged similar to that recently passed by the New York State Legislature in regard to the proper isolation and quarantining of children with suspicious diseases of the eyes in all residential schools and in large institutions in which children are brought together. Moreover, similar rules, with proper modifications, should be adopted in prisons, reformatories, and other institutions for adults. Especially does this hold good concerning soldiers in barracks, and sailors on shipboard.

Third, By educating the public. The laity should be cautioned as to the contagious character not only of the so-called granular lids, but especially of those severe forms of inflammation of the eye which result from inoculating it with gonorrhœal matter. This might be accomplished by posting notices in proper places, officially signed by the Board of Health or other proper officers. Other proper notices posted in stone-quarries, machine-shops, etc., would tend to lessen the proportion of accidents to eyes, so frequent in these places.

Fourth, That steps be taken to prevent the introduction into this country, by immigration, of cases of contagious diseases of the eye.

Fifth, That renewed efforts be made by the profession to collect data relating to bacteria affecting the eye, especially to the action of the gonococcus, the so-called trachoma coccus of Michel, and other forms of either the normal or diseased conjunctiva.

In submitting this report the committee is impressed with the fact that any such presentation of statistics and recommendations is entirely inadequate to give a proper idea of the importance of the subject. In order to condense the statement as much as possible, it has been necessary to omit certain phases of the question entirely. The distribution of blindness in different portions of the State; the relation of certain causes which produce it to altitude, to density of population, and other factors, — have been entirely omitted for the sake of brevity. The bacteriological questions which it involves have been hardly referred to, although considerable data have been accumulated relating to the causes of the disease here, by a personal examination of the same causes as they exist in Egypt, in Finland, and in other countries where blindness is of frequent occurrence. It is hoped, however, that these few facts, though imperfectly presented, may arouse some slight interest in the subject, and, in doing so, tend to lessen the number of those most unfortunate and most pitiable of human beings, the blind.

LUCIEN HOWE
E. V. STODDARD } *Committee.*
HENRY D. NOYES

BOOK-REVIEWS.

The New Eldorado; A Summer Journey to Alaska. By MATURIN M. BALLOU. New York, Houghton, Mifflin, & Co. 12°. $1.50.

MR. BALLOU, who has travelled extensively in various parts of the globe, here gives us an account of a recent trip across this continent and up the coast of southern Alaska. He is a close and cultivated observer, though not exactly of the scientific order, and his book is intended rather for popular than for learned readers. He tells his story well, except that he is sometimes too anxious to be picturesque, and occasionally falls into rhetorical exclamations that might better have been omitted. On his journey across the continent he tarried nowhere any length of time save in the Yellowstone National Park, where he spent ten days, and to which he devotes several chapters. The scenery that abounds there, however, is not easily described, and his book contains no pictures nor maps to supplement the work of the pen. Arrived on the Pacific coast, Mr. Ballou's party embarked on a steamer and sailed up the coast of Alaska, passing for the most part between the islands and the mainland. The northern parts of the territory were not visited, though the author gives some account of them taken from other authorities. Alaska has generally been supposed unfit for agricultural purposes; but Mr. Ballou assures us that all the southern part will grow any crops that will thrive on the Atlantic coast north of Chesapeake Bay. Still the agricultural resources of the region as a whole are admitted to be small; but its fisheries are well known as of great value, its timber abundant, and its mines of gold, iron, and coal, of special importance. All these resources are described at length by our author, as is also the scenery of the region he passed through. The native inhabitants, however, hardly correspond with the natural features of the country. Mr. Ballou says what good he can of them; but in laziness, filthiness, cruelty, and superstition they are like all barbarians the world over. The Eskimo live in the extreme north, while the natives of the region Mr. Ballou visited are similar to the Indian tribes of our older Territories, though superior in intelligence. Since the government has established a few schools among them, they have shown great eagerness to learn, and the increase of such schools is strongly advocated. Mr. Ballou complains that Congress has not done its duty by Alaska, and gives good reasons for this view, and he also thinks that the scientists have been backward in the work of exploration. On his part, he believes that the future of Alaska is bright with promise, and readers of his book will, to some extent at least, share his views.

Elementary Lessons in Heat. By S. E. TILLMAN. Philadelphia, Lippincott. 8°. $1.80.

THE author is professor of chemistry at the United States Military Academy, and prepared these lessons for use at West Point in a short course on heat. The character of the matter presented was determined to some extent by the peculiarities of the course of study at the academy; but the main point sought was to give the information most likely to be needed, and to give it without overloading with details of apparatus and methods of investigation. After a number of chapters on the elementary principles of heat, there follow several on thermodynamics, — not treated mathematically, — and the influences of heat and cold on meteorological phenomena.

Our Cats and all about Them. By HARRISON WEIR. Boston and New York, Houghton, Mifflin, & Co. 12°. $2.

MR. WEIR is president of the National Cat Club of England; but before he was that, and before the club existed, he was the originator of the cat-show at the Crystal Palace, held in the summer of 1871.

What they talk of at the Cat Club we may believe to be the "points" of their pets, and the latest trick or show of wisdom in door-opening or wandering home of these same pets. This is what the book tells of. It is a gossipy book, full of stories of the doings of cats, sprinkled with descriptions of the innumerable kinds, with an account of their diseases, and ending with several chapters on trained cats, and cats that have learned to fish.

The author confesses to having been won over to a love for cats