heaviest subsidized French and German transatlantic steamers possessed. He argued strongly in favor of twin-screw propulsion, on which point the discussion that followed mainly turned. The views of the author were strongly supported by Mr. H. White, chief constructor to the navy, who stated that in 1878, on the basis of admiralty data, he had said every thing in favor of twin screws that Mr. John had stated in his paper. W.

London, July 31.

NOTES AND NEWS.

IT may interest our readers to see the following table of percentages on which some comments are offered in another part of the paper. These percentages represent the proportion of members from the region designated to the total membership registered (exclusive of Europeans) at the meetings of the American association for the advancement of science during the last ten years.

	Canada.	North-eastern states.				Other northern states. East of Mississippi.		Other northern states. West of Mississippi.		Southern states.
	Montreal, 1882.	Buffalo, 1876.	Saratoga, 1879.	Boston, 1880.	Ph'delphia, 1884.	Cincinnati, 1881.	Ann Arbor, 1885.	St. Louis, 1878.	Min'apolis, 1883.	Nashville, 1877.
Canada.....	14	3	3	2	3	1	2	1	2	0
N.-east. states.	65	68	80	84	73	29	37	35	33	24
Other north'n states. East of Mis.riv.	14	19	8	7	12	54	49	19	47	13
Other north'n states. West of Mis.riv.	3	4	3	4	5	5	5	31	15	5
South'n states.	3	5	5	3	8	10	7	12	4	57
Total att'd'ce exl. Europeans	918	199	258	979	978	542	364	132	328	166

— At the Buffalo meeting of the American association it is proposed to devote especial attention to the study and discussion of the interesting phenomena of the Niagara Falls and the gorge below. On Friday, August 20, one or more preliminary papers of an expository and suggestive nature will be given, intended to prepare the way for a short field-study of the falls and the gorge, which will occupy Saturday. Monday forenoon will be devoted to the discussion of the gorge and the problems to which it gives rise. A new survey of the falls has been arranged for, so that a considerable addition to the data for the computation of the rate of recession will be at command, and it is expected that new observations in other important lines bearing upon the chronology of the gorge will be presented, and will throw fresh light upon the history of the formation and recession of the falls and upon the utility or untrustworthiness of the gorge as a geological measure of time.

— Among the few local scientific societies of the United States, the Wyoming (Penn.) historical and geological society is especially to be commended for its activity. The second volume of its Proceedings, just published, contains, among other historical papers, several of interest on the local geology of the Wyoming valley. It would seem that the scope of the society might very profitably be widened so as to include other fields of scientific research in natural history.

— The 'Third annual report of the Wisconsin experiment station' deals with a variety of subjects, chiefly the results of experiments on crops, feeding, the composition of food-stuffs, fertilizers, etc., by Professors Henry and Armsby, together with more strictly botanical papers by Professors Trelease and Seymour.

—The 'Report of the life-saving service for 1885' presents not a few facts of interest deserving attention. One can only rightly appreciate the great importance that this branch of the public service has attained by the examination of the results as given for the past year in this report. The entire number of stations in operation was 203, of which 157 are on the Atlantic coast, 38 on the lakes, and seven on the Pacific coast, with one on the Ohio River at Louisville, Ky. The entire expense for the support of these stations during the year was less than $800,000, — not one-fourth as much as the value of the actual property saved. According to the report, there were 256 disasters to documented vessels during the year within the field of station operations. There were on board these vessels 2,206 persons, of whom 2,196 were saved, and only 10 lost. The estimated value of the vessels was $3,519,550, and that of their cargoes, $1,084,905, making the total value of property involved $4,604,455. Of this amount, $3,352,760 was saved, and $1,251,695 lost. The number of disasters involving the total loss of the vessels was 56. Besides the foregoing, there were 115 disasters to smaller crafts, from which 231 persons were saved, with the loss of only one life. The total loss of life was the smallest ever reached by the service, except in the year 1880, when but nine persons were lost. During the fourteen years' existence of the present service the total value of property saved has amounted to over $35,000,000, and there have been over 25,000 persons saved, with only 457 lost out of all those endangered. These figures seem almost incredible, and speak

volumes for the efficiency of the service, reflecting the greatest credit, not only upon the superintendents and directors, but upon the keepers and crews of all the stations as well.

— Mr. W. M. Davis has recently given in the *American meteorological journal* an account of the derivation of the term 'trade-wind.' The original meaning of the word 'trade' has been so far replaced by an acquired meaning, that a popular error has arisen as to the derivation of the common term, 'trade-wind.' Webster's dictionary says the trade-wind is "so called because of great advantage to navigators, and hence to trade." Worcester's dictionary explains it as "so called because favorable to commerce." But looking further back, the following extract from Skeat's etymological dictionary is instructive: "Trade-wind, a wind blowing in a constant direction, formed from the phrase, 'to blow trade,' to blow always in the same course." A step further discovers that trade is "properly that path which we 'tread.' . . . It once meant, literally, a 'path.' . . . The M. E. [Middle English] words are 'tred' and 'trod,' both in the sense of foot-mark. All from the A. S. [Anglo-Saxon] 'tredan,' to tread." The following extracts show the early use of the term, two or three centuries ago, by the navigators of that time: Hakluyt wrote, "The wind blowing trade, without an inch of sail, we spooned before the sea" ('Voyages,' iii. 849, published in 1600). Dampier said, "Trade-winds are such as do blow constantly from one point or quarter of the compass. There are divers sorts of these winds; some blowing from east to west, some from south to north, others from west to east, etc. Some are constant in one quarter all the year; some blow one-half the year one way, and the other six months quite contrary; and others blow six months one way, and then shifting only eight or ten points, continue six months more, and then return again to their former stations, as all these shifting trade-winds do" (Discourse of the trade-winds, in his 'Voyages and descriptions,' London, 1705, vol. ii. part iii. pp. 1, 2).

— The 'Fourth annual report of the U. S. entomological commission,' after much seemingly unnecessary delay on the part of the public printer, has recently appeared, and forms a worthy addition to the preceding volumes. It deals chiefly with the cotton-worm, with a chapter on the boll-worm — two of the most injurious insect pests that the south, at least, has to combat. The subjects are treated fully, and a large share of attention is devoted to the consideration of insecticides and insecticide apparatus, fully justified by the importance of the subject. The losses of crops in some places in the south during different years from the depredations of the cotton-worm or larva of the cotton-moth (Aletia), are very heavy, the total estimated loss for a single year of severe depredation throughout the southern states being as high as thirty million dollars, while the average annual loss for the fourteen years following the war is placed at fifteen million dollars. The chief objects of such entomological investigations are, of course, the discovery or improvement of remedies and of their methods of application, the results of which, both positive and negative, in this case indicate that arsenical compounds and pyrethrum, both first suggested by Dr. Riley, are the most efficacious. The boll-worm (Heliothis), on account of its wide distribution both north and south, and the almost indifference in the choice of its food-plants (or food-habits, for it is omnivorous, carnivorous, and cannabalistic), is but little less injurious a pest. The northern agriculturist, or even the northern housewife, is only too familiar with it for its injuries to growing corn in the ear. Their depredations are within the boll or pod of the cotton, and often render whole fields valueless. Aside from the more practical nature of the work accomplished, chiefly by or under the direction of Professor Riley, the report contains considerable matter of more strictly scientific interest on the habits, etc., of different insects, including a chapter on the anatomy of Aletia by Dr. Minot and Mr. Burgess.

— The Prince of Monaco sailed from the military port of Lorient July 14, in company with Professor Ponchet, to pursue a series of observations on the Gulf Stream. He carried with him five hundred floats, so constructed as to be affected by naught save the currents, to be placed in the water near the twentieth degree of west longitude, between the latitude of Cape Finisterre and that of the south of England. In addition, he has fitted out with the necessary appliances for deep-sea and surface zoölogical collecting, which will be pursued during the voyage.

— A marked improvement in the criminality of Spain has been apparent during the last few decades. In 1843, with a population of twelve million, there were 17,683 crimes against the person, and 10,425 against property; while in 1884, with a population of seventeen million, the numbers had decreased to 9,187 and 9,599 respectively. These figures are, however, yet very high in comparison with those of France. Thus, during 1883 there were 1,457 homicides or assassinations in Spain against only seven hundred in France, with more than double the population. Infanticides, however, are proportionally less common. It is

a noteworthy fact that the professional criminal is not nearly so common in Spain as in France.

— The Entomological society of Washington, founded but two years ago, has given an evidence of its activity by the publication of the first part of its first volume of proceedings. There can hardly be any place in the United States so favorably located as Washington for an active entomological society, and the list of well-known entomologists enrolled as members is an assurance that much can, and we believe will be, accomplished by the society.

— Statistics from a German periodical give a very unfavorable showing of the crowded condition of Berlin. Of the forty thousand houses contained in the city, one half have from twenty to thirty tenements each, while in another thousand or more there are a still greater number of tenements. Among these apartment or tenements there are seventy-five thousand consisting of a single room, inhabited by two hundred and seventy thousand people, or an average of about four to each room. The apartments divided into two rooms also number about seventy-five thousand, occupied by three hundred and sixty thousand persons. The houses in the poorer quarter are five or six stories high, and built so close to each other that there is insufficient light and air. Filth and repulsive odors are the inevitable result. The promiscuous crowding into single rooms of adults and young of both sexes, naturally results in debased morals, and the city is renowned for the extravagant number of juvenile criminals who prowl around the streets. The death-rate of Berlin is one of the highest among the large cities of Europe.

— The *Neurological review* (Chicago, *Rand, McNally & Co.*) is the title of a new monthly to be devoted to original articles, as well as a review of the recent literature in this field of medical and psychological science. The largely increased number of periodicals devoted to these and allied subjects of late, is a strong evidence of the greatly increased activity in researches pertaining to the mental and nervous functions in America as well as in Europe. The present review appears to be well edited by Dr. J. S. Jewell.

— 'Lanolin' is the name given to a substance which is being extensively recommended as a basis for ointments. It possesses properties which are not found in any other variety of fat. In 1868 Hartman and Schultze found that the fatty acids of sheep's wool were in combination with cholesterine. Such a fat will take up one hundred per cent of water, and will not readily decompose. Ordinarily the neutral glycerine fats and vaseline have been used as the bases of ointments. Fatty ointments by their decomposition form irritating substances, and thus tend to injure the skin. Vaseline is not readily absorbed. Lanolin appears to be free from both these objections, and will doubtless come into general use.

— Dr. Wooster Beach, in the *Medical record* for July 24, discusses the proper mode of infliction of the death penalty. He states that the autopsies of those who have been hung show that in not over five per cent is either dislocation, fracture, or any injury to the spinal cord observed. He thinks that any of the following methods could, with advantage, be substituted for hanging. The condemned man should be firmly secured, and a vital part should be struck by a ball from a rifle which had previously been sighted and secured fast; or electricity might be employed. The recent improvements in the apparatus for generating electricity make this method of causing death much surer than it formerly would have been. Dr. W. A. Hammond thinks that the usual apparatus of traps and weights should be dispensed with, and that the body of the criminal should be drawn up slowly by a rope around his neck. Death would be speedy, certain, and painless. Dr. N. E. Brill criticised, some months ago, the present methods of hanging, and as a result a committee of the Society of medical jurisprudence of New York drew up a bill and submitted it to the legislature, in which the condemned was permitted to select the method by which his life should be taken. This bill failed of passage. In Germany decapitation is done with the sword, in France with the guillotine, and in Spain by the garotte. Poisoning by carbonic-acid gas, chloroform, and hydrocyanic acid has also been suggested as substitutes for hanging.

— A study of ten thousand physicians' prescriptions has recently been made by the editor of the *Chemist and druggist*. Spirits of chloroform, glycerine, and sirup of orange-peel, are the most frequently prescribed; then come bromide of potash, wine of ipecac, sulphate of quinine, bicarbonate of soda, liquor ammoniae acetatis, bicarbonate of potash, and sweet spirits of nitre.

— The commercial exportations of France during the year 1884, we learn from the *Revue scientifique*, amounted in total value to $843,400,000, an increase of only about $65,000 over that of 1869. The largest exportations during this time were in the years 1873, 1875, and 1882, when they were more than $100,000,000 greater. Of the exportation in 1884, about $200,000,000 went to England, $83,000,000 to the United States, $103,000,000 to Belgium, $75,000,000 to Germany,

$61,000,000 to Switzerland, etc. The exportation to the United States has increased $105,000,000 since 1869, though in 1872 it was somewhat greater, and in 1882 reached a total value of $107,000,000.

— Professor Forbes publishes in the 'Bulletin of the Illinois state laboratory of natural history,' vol. ii. pp. 257–321, an account of the continuation of the interesting studies on the contagious diseases of insects begun by him in 1883. In this account he describes at length a common and highly destructive disease of the European cabbage-worm (Pieris rapae). This disease he believes to be caused by a spherical micrococcus, of which he gives two excellent microphotographs. More complete and conclusive studies were made of a disease of the silkworm, which was apparently that known as jaundice. Of especial interest is the fact that he was able to produce this disease in cabbage-worms by moistening their food with culture-fluids containing the bacteria of this disease derived from silkworms. These experiments seem to us to be of the highest importance. If this or some other bacterium could be used against the cotton-worm, how much more effectual it might be than the poisons which are now used! These are liable to be washed away by the first rain, and will not multiply themselves. Professor Forbes also reports at length on a disease attacking two species of datana in his breeding-cages. This disease he is positive is the well-known *flacherie* of the silkworm.

—One of the most interesting special reports issued in connection with the last census is part i. of the report on 'Social statistics of cities,' by Col. George E. Waring, jun., the sanitary expert, which is now going through the press, and will be ready to be issued Sept. 1. The subject-matter of this volume is confined to the statistics of certain cities in New England and the middle states; and the second part, which is still to appear, will be devoted to the cities in the southern and western states. The method pursued is to give a historical sketch of the town, which is followed by a description of the climate, the drainage, the financial condition, the gas supply, interments, manufactures, parks, reformatories and healing institutions, police, places of amusement, population, public buildings, streets, water-works, and, in fact, complete statistics of the social life in the places described. In many instances, maps are given showing the system of sewerage, the location of places of amusement, parks, libraries, and museums. The sketches of the cities of Boston, New York, and Philadelphia are very elaborate, especially in relation to the subject of sanitary drainage. The second volume will contain a sketch of New Orleans, furnished by Mr. George W. Cable, the novelist. The report complete will contain about 2000 pages.

—The Ophthalmological society of Heidelberg has awarded Professor Helmholtz a gold Graefe medal and the sum of fifty dollars yearly, as the greatest benefiter of science.

— The Commissioner of agriculture has prepared a circular containing rules and regulations for co-operation between the department of agriculture and the authorities of the several states and territories, for the suppression and extirpation of contagious pleuro-pneumonia of cattle. It will be remembered that congress appropriated $100,000, at its last session, to be employed in such manner as the commissioner may think best, to prevent the spread of pleuro-pneumonia.

— The following changes have been made in the personnel of the coast survey since our last issue: Assistants Boyd, Bradford, and Ellicott have been instructed to organize a party to perform field-work on the coast of Maine, and to survey the topography of the north-eastern corner of the state. The steamer Bache, Lieutenant Hawley commanding, is doing the hydrographic work; Messrs. Vinall, Hodgkins, Van Orden, and Gray have taken the field on the re-survey of Long Island Sound; Mr. E. L. Taney, with a topographical party, is at work on the Kill von Kull; Captain C. O. Boutelle is organizing the parties for furnishing points for state surveys. The appropriations for this purpose this year being so limited, only four parties can be put in the field. The constitution of a permanent tide station on Sandy Hook has begun, and will be finished in about two months. It is hoped when this gauge is finished that an uninterrupted series, both winter and summer, extending over a period of 19 years, will be obtained.

— The number of deaths from yellow-fever in Rio de Janeiro for the fifteen years preceding the last was 15,338. The fever first appeared in 1849, and has been continuous since, though much more severe at times. In 1850 the number of deaths of cases treated in the hospitals was twenty-six per cent, in 1870, seventeen per cent, and in 1883, thirty per cent.

— New discoveries of gold in West Australia, where it has hitherto not been known to exist, are causing considerable excitement in that part of the continent. The locality is in the north-western part, four hundred miles from King Sound, in a wild, desolated, and almost impassable region. The gold is found near the surface in alluvium.

— The 'Pacific coast tide tables' for 1887 have been received from the printer by the coast survey. It is a curious fact that these are the most perfect ever yet received, and close examination thus far reveals not a single error or misprint in the entire edition. The 'Atlantic coast tide tables' will be given to the public in about a week. Section xvi. of the topographical survey of the District of Columbia is in the hands of the photo-lithographer. This beautiful sheet covers the country in the vicinity of the picturesque village of Tenallytown, near which the summer house of President Cleveland is located. The chart of Puget Sound, the Gulf of Georgia, Straits of Fuca, etc., in one sheet, will probably be placed in the hands of agents within two weeks. This chart will supply a long felt want to the people of Washington Territory, covering, as it does, all the inland waters from Gray's Harbor, on the Pacific coast, to the Nanaimo coal fields, in British Columbia. Assistant Schott is well advanced with the computation of magnetic observations of the Greely party in the Arctic regions; the computations of Arctic tides from observations made by the same explorer are also well under way.

— The annual exportation of ivory from Africa has of late years been nearly four hundred thousand pounds, about two-thirds of which is obtained from the eastern part of the continent. These figures represent a sum of about four million dollars, and the death of sixty-five thousand elephants.

— The fiftieth anniversary of the founding of South Australia in December, 1836, will be celebrated by an international exposition to be opened on the twentieth of June next at Adelaide. The population of the colony now numbers three hundred and thirteen thousand, but at present it is decreasing rather than increasing.

— Computations from statistics show about one million as the number of blind persons throughout the world, which, estimating the population of the globe at 1,400,000,000, gives about one blind person to every fourteen hundred. In Austria there is one to every 1,785 inhabitants; in Sweden, one to every 1,418; in France one to every 1,191; in Prussia, one to every 1,111; in England, one to every 1,037, etc. The greatest proportion of blind persons is in Egypt, where, in Cairo, there is one among every twenty inhabitants. Australia shows the greatest variation; in New Zealand there is only one to every 3,550 inhabitants, while in Tasmania there is one to every 625. The nation possessing the greatest number of institutes for the blind is Germany with thirty-five; next comes England with sixteen; France with thirteen; Austria-Hungary with ten; Italy with nine; Belgium with six; while according to our authority, the *Deutsche rundschau für geographie und statistik*, America, Asia, and Africa together possess only six. There are two in Australia.

— There are twenty-one cities in the German empire containing each more than one hundred thousand inhabitants.

— The population of New South Wales, according to the census recently taken, is very nearly one million, which is of interest as showing the very rapid growth, forty per cent increase, during the last ten years.

— According to Dr. Tipton of Alabama, in the *Medical journal*, the negroes before the war in the south never had phthisis, but now it is the greatest scourge among them. He also says that the negro is rarely if ever near-sighted.

LETTERS TO THE EDITOR.

***Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

The source of the Mississippi.

IN June, 1884, the *New York Herald* announced that recent explorations had revealed the true source of the Mississippi River to be, not the lake discovered by Schoolcraft in 1832 and named by him Itasca, but a tributary lake to the south of it, discovered and first explored by a Capt. Willard Glazier in 1881.

In commenting upon this alleged discovery, *Science* says (May 15, 1885): "To this lake he (Glazier) gives his own name, that the fame of his achievement may be perpetuated. It is perhaps unfortunate that, as this whole region was sectionized by the general land office several years previously, lines having been run at every mile, a prior claim to this great discovery may arise."

This comment was thought to be sufficient to impress upon all the absurdity of a claim to have discovered, at this late day, a lake of any considerable size in the region referred to; but as one of our popular school geographies[1] has indorsed the genuineness of this discovery (?) by adopting 'Glazier Lake' as the source of the Mississippi, and as the makers of our school geographies have a bad habit of blindly following each other's lead, it will be well, perhaps, to examine a little more closely Mr. Glazier's claim to such recognition.

In 1806 Lieut. Zebulon Pike, and in 1820 Governor Lewis Cass, penetrated to Red Cedar or Cass Lake; but there is no record of definite explorations beyond this lake earlier than those of Henry R. Schoolcraft, who in 1832, under authority of the war department, led a well-equipped expedition through this region. In his brief official report, dated at Sault Ste. Marie, Sept. 1, 1832, Schoolcraft states that Lieutenant Allen accompanied him as topographer, and that he carefully collected material for maps and plans of the entire route. Upon his return to Detroit, Schoolcraft wrote, in 1833, a full narrative of the expedi-

[1] '*Barnes's complete geography*'. By JAMES MONTEITH. New York and Chicago, *A. S. Barnes & Co.* Copyright 1885.