

versal time, in the course of which he paid a high compliment to the railways of the United States and Canada for having reduced the number of local times from seventy-five to five, by adopting the five standard meridians. The scheme of hourly meridians, however, could only be considered a provisional arrangement, which would ultimately lead to the adoption of universal time, for which he thought the name 'world time' would be the best. The 'world' day would commence at Greenwich, midnight, and count from 0 h. to 24 h. Among the authorities cited by Mr. Christie in support of the twenty-four hours system, was that of the president of the Western union telegraph company (U.S.A.), who considered, that, in addition to diminishing risk of errors, it would save the cost of a hundred and fifty million letters annually.

W.

London, March 27.

NOTES AND NEWS.

THE fourteenth annual meeting of the American public health association will be held at Toronto, Ont., Oct. 5-8, 1886. The executive committee have selected the following topics for consideration at said meeting: 1. The disposal of the refuse matters of cities and towns; 2. The condition of stored water-supplies, and their relation to the public health; 3. The best methods and the apparatus necessary for the teaching of hygiene in the public schools, as well as the means for securing uniformity in such instruction; 4. Recent sanitary experiences in connection with the exclusion and suppression of epidemic disease; 5. The sanitary conditions and necessities of school-houses and school-life; 6. The preventable causes of disease, injury, and death in American manufactories and workshops, and the best means and appliances for preventing and avoiding them; 7. Plans for dwelling-houses. The local committee of arrangements at Toronto, Ont., have already actively begun the work essential to a large and successful meeting. In addition to the usual work incident to such an undertaking, they will extend invitations to foreign sanitarians, and secure such transportation facilities as will probably insure a good representation from abroad. Communications regarding matters of transportation or of a local character should be addressed to Peter H. Bryce, M.D., chairman local committee of arrangements, Toronto, Ont. Mr. Henry Lomb of Rochester, N.Y., who is already well-known through the prizes which he gave last year for the best essays on certain sanitary subjects, offers for the present year the sum of seventeen hundred and fifty dollars, to be awarded as prizes

on the following subjects: 1. The sanitary conditions and necessities of school-houses and school-life, one prize, \$500; 2. The preventable causes of disease, injury, and death in American manufactories and workshops, and the best means and appliances for preventing and avoiding them, one prize, \$500; 3. Plans for dwelling-houses, — (a) A plan for a dwelling-house not to exceed in cost, exclusive of cellar, eight hundred dollars (prizes: first, \$200; second, \$100; third, \$50; fourth, \$25); (b) A plan for a dwelling-house not to exceed in cost, including the cellar, sixteen hundred dollars (prizes: first, \$200; second, \$100; third, \$50; fourth, \$25). Accommodations to be provided for families consisting of five persons. All essays and plans for the above prizes must be in the hands of the secretary, Dr. Irving A. Watson, Concord, N.H., on or before Aug. 15, 1886.

—The officers of Section D (mechanical science and engineering) of the American association for the advancement of science have issued a circular stating that the steadily increasing interest and importance of the meetings of Section D justify the expectation of a large attendance of engineers at the Buffalo meeting. The meetings of the American association offer to students of mechanical science and to engineers opportunities which cannot be elsewhere obtained, of conveniently meeting at one time a large number of gentlemen eminent in branches of science to which engineering is closely related, especially mathematics, physics, chemistry, geology, and economic science. The scope of this section is broad enough to include all branches of engineering. It occupies a field peculiar to itself, which by no means encroaches upon that of the various engineering societies, but rather adjoins and supplements it. These societies deal chiefly with accomplished practical results, while Section D affords an opportunity for the presentation and discussion of papers upon the application of scientific methods to every department of engineering. The object of the section, in accordance with the name of the association, is the 'advancement of science.' The following may be named as among the general classes of subjects which this section may properly consider within its scope: mechanical science in the abstract; mechanical research; problems in engineering of national importance, and such as are connected with more than one branch of engineering; the education of engineers; the relation of the government to engineers in civil life; the endowment and organization of mechanical research. The officers extend a cordial invitation to all to attend the meetings of the section, and to contribute such papers or discus-

sions as will aid in furthering its objects. It is requested that all who intend to contribute papers will notify the secretary (William Kent, 92 Reade Street, New York) as soon as possible. The committee on the best method of teaching mechanical engineering, — Prof. J. Burkitt Webb, Prof. George J. Alden, Dr. Calvin M. Woodward, and Prof. Arthur Beardsley, — and the committee on the use and value of accurate standards, screws, surfaces, and gauges, — Prof. William A. Rogers, Mr. Oberlin Smith, and Prof. J. Burkitt Webb, — are expected to present reports at the Buffalo meeting.

—The fish commission steamer Albatross arrived at Nassau, New Providence, March 19, after a most successful trip. The ship was chiefly engaged in making soundings. Two naturalists were landed at Watling's Island, San Salvador, where much valuable scientific material was gathered during a stay of two weeks. But little dredging has been done, so that few accessions of marine life have been made. At Rum Cay, Conception Island, Cat Island, and Great Exuma Island, the naturalists of the expedition obtained many valuable specimens of fish, lizards, bird's-nests, eggs, cave relics, pottery, and about five hundred bird-skins. These islands are very small, and thinly populated. Vegetation is scarce, and the islands themselves are formed almost entirely of rock. Coconut-trees and bananas are abundant, but oranges and apples rather scarce. The Albatross is now at Key West, and will spend some time dredging in the Gulf of Mexico and vicinity.

—General Hazen said recently, in his testimony before a congressional committee, that foreign signal stations were a necessity, and the establishment of a station in the West Indies had fully demonstrated this fact. It is quite probable that congress will authorize the establishment of stations at important foreign points.

—The commissioners of the District of Columbia have refused the gift of Judge Pacificus Ord, of a tract of land along Rock Creek for a zoölogical garden. The grant was made on the express condition that the property should be used for a free zoölogical garden and free public baths, to be kept by officers created by congress for that purpose. The commissioners think there is no present need of a zoölogical garden or bath-house, nor have they the means to establish them.

—The U. S. fish commission is busily engaged in stocking the Great Lakes with white-fish. Cars Nos. 2 and 3 are now at Northville, Mich. About April 15 the shad distribution will begin. The

eggs are hatched at the Fort Washington station, and shipped to the central station of the commission at Washington, the distribution being made from there. The distribution of carp has ceased for this season, as it has been found impracticable to ship these fish after the first of March; the young carp developing fungus, and becoming emaciated.

—No less than forty-four wrecks appear on the April number of the 'Pilot chart' issued by the hydrographic office. Some were seen in January, but the greater number are reported from observations late in February and through March. Three recent cases of disastrous collision with sunken wrecks are quoted. It is announced that the vessels of the National line, including all the cattle-steamers, have made arrangements for the regular use of oil in rough weather.

—The bark Flora (Spanish) reports that on March 21, Cape Hatteras, bearing W.S.W., distant thirty-five miles, three very large seas came up from astern [vessel probably heading north], and in passing caused the vessel to roll deeply. At the time the sea was very smooth, and became so again immediately after the passage of the heavy swells. There was a light breeze from S.S.W. The captain says he never saw or heard of such an occurrence before. On p. 266, vol. ii., of the 'Voyage of the Challenger,' Sir Wyville Thomson says, "It must be a wonderful phenomenon, an enormously heavy swell arising in a perfectly calm sea, without any apparent cause, and breaking against the leeward coast of the island (Ascension) with almost irresistible fury."

—A bottle was found floating near the beach at Colon, on the 1st of February. It had the appearance of having been some time in salt water, and was found to contain two papers on which was written as follows: "Lat. 12° 47' N., Long. 24° 47' W., noon, Saturday, 20th December, 1884; ship Patriarch 69 days out from New Castle (N.S.W.), and bound for London; all well."

—The New York *Evening post* states that "the treasury commission for investigating the coast survey have addressed a communication to the secretary of the treasury in which they say, 'In the light of the demonstrated inaccuracy of some of the evidence upon which the committee relied, and to the extent hereinbefore indicated, it is but just to admit that the criticism of Mr. C. S. Peirce in the committee's report was unwarranted by the facts.' It is understood to be admitted that Mr. Peirce's expenditures were overstated, and his work undervalued. The only criticism the committee continue to maintain is, that he

practically conducted his operations as he saw fit. His work has been done under detailed instructions issued by the superintendent of the survey, and these instructions have been based upon projects which Mr. Peirce was required to submit each season. We will only add that this finding is what every one acquainted with Mr. Peirce must have expected as the result of a calm and unprejudiced examination."

— Telegrams received from Professor Pickering announce the discovery of three new asteroids by Dr. Palisa of Vienna. The first was discovered on March 31, and was of the thirteenth magnitude; the other two, on April 2 and 3, of the thirteenth and twelfth magnitudes. These three will receive the numbers 254, 255, and 256 respectively, and will raise the whole number discovered by Dr. Palisa to fifty-three.

— The programme for the second half of the course of lectures under the auspices of the Anthropological and biological societies of Washington is as follows: Saturday, April 10, Dr. Washington Matthews, U.S.A., The gods of the Navajos; Friday, April 16, Dr. D. B. Simmons, Social status of the women of Japan; Saturday, April 24, Prof. W. K. Brooks, Life; Saturday, May 1, Mr. Lester F. Ward, Heredity and opportunity; Saturday, May 8, Dr. J. S. Billings, U.S.A., Animal heat.

— The series of summer schools of the Mont-eagle (Tenn.) assembly is announced to open on June 30, and continue to Aug. 25. The scientific instruction in chemistry, geology, and botany, will be under the charge of Prof. J. I. D. Hinds.

— We cut the following from the Atlantic 'Pilot chart' for April: "Mr. J. H. Barker, an oil-merchant of New York, informs the branch hydrographic office that he has the contract with, and since Jan. 1 of this year has furnished, the National line of steamships with oil to be used to lessen the dangerous effects of heavy seas. Ten vessels, including all the cattle-steamers, have been provided with the necessary appliances to use oil when occasion requires. The company's requisition called for fish-oil, but the recent experiments proved it thickened too rapidly when in contact with water at the general low winter temperatures. To obviate this tendency, Mr. Barker has mixed a mineral oil having a low, cold test, with fish-oil which has a comparatively high test: the result is an oil which coagulates at a much lower temperature than ordinary fish-oil, but which it is claimed will be as efficacious. The mineral oil has stood the test as a lubricant for railroads in cold weather, and it is claimed

will be very useful for sea purposes when mixed with a proper proportion of fish-oil, during the mild and warm months fish alone is to be supplied. The method adopted of using oil is by means of punctured canvas bags filled with oakum."

— From numerous experiments on flies, beetles, hymenoptera, neuroptera, and lepidoptera, M. Plateau concludes that insects with compound eyes, with or without simple eyes, pay no heed to differences of form in the light openings of a half-darkened room, but fly with equal readiness to the apparently easy and apparently difficult way of escape; that they are attracted to the more intensely lightened opening or to one with apparently greater surface; and that, in short, they cannot by vision distinguish form, or only to a very slight extent.

— Chief engineer Melville of the ill-fated Jeanette has recently stated that he is still endeavoring to organize another polar expedition, and, although his schemes have met with little success, he will yet continue to work upon them.

— The question of the movements of the ulna and radius of the human arm during the act of pronation and supination has of late provoked considerable discussion among students of anatomy. The view most commonly held and taught, that the elbow-joint is a perfect hinge, and that the ulna remains fixed during pronation and supination, has been disputed by some recent investigators. At the last meeting of the Biological society of Washington, Dr. Frank Baker read a paper upon this subject, in which he concludes that the ulna is capable of considerable lateral movement, and that in pronation and supination both the ulna and radius rotate. Dr. Harrison Allen of Philadelphia has also been studying this question with the aid of instantaneous photographic apparatus, and is said to have reached similar conclusions.

— Harrison & Sons, London, announce 'Physico-chemical constants, melting and boiling point tables,' by Thomas Carnelley, professor of chemistry in University college, Dundee. These tables will contain about fifty thousand melting and boiling point data. The object of the tables is as follows: 1. To present as complete a list as possible of all known melting and boiling point data, and at the same time to indicate which of them is probably the most exact, when there are several determinations referring to the same substance; 2. To state as fully as possible the constitution of each substance to which the data refer; 3. To adopt such a system of ar-

rangement as will facilitate as far as possible the ready finding of the data relating to any given substance; 4. To give the authority and reference to the original memoir in each case (the tables thus form a catalogue of the literature referring to most chemical substances); 5. To give, in addition, the reference, if any, to either 'Watt's dictionary of chemistry,' or to the journal of the Chemical society, for the convenience of those who are unable to refer to the original papers (this is a feature of the work which will doubtless be found particularly useful, more especially to British and American investigators). The tables will be issued in two volumes, of which the first is now ready.

—Prof. Mansfield Merriman of Lehigh university, Pennsylvania, has published a "Key to his text-book on the mechanics of materials." This key contains the answers to the problems in the text-book, and is published in response to inquiries from those who have used the book. The opportunity has also been taken to give the method of solution of a few of the difficult problems.

—The first part of the new zoölogical journal announced by us some time since, to be edited by Dr. J. W. Spengel of Bremen under the title of *Zoologische jahrbücher*, will be soon published, and will contain the following papers, besides shorter notices: Hartlaub, 'Contributions to the knowledge of the species of *Manatus*;' Reichenow, 'Monograph of the genus *Ploceus*, Cuv.:' Bergh, 'The *Marseniadae*;' Nehring, 'Contributions to the knowledge of the species of *Galictis*;' Frenzel, 'On glycerine preparations.' The price of the part is nine marks. Four parts make a volume. Beside the regular parts, supplementary ones will be issued from time to time for the publication of separate papers too long to appear in the journal itself. The regular subscribers may or may not take the supplements also, as they prefer. The first of the supplements is to appear shortly, and will contain Dr. K. Jordan's memoir on the butterfly fauna of north-west Germany.

—Dr. Patrick of St. Louis has in preparation a work on the mounds of southern Illinois, based upon a large collection of crania and other objects from that region. His report will be issued by the U.S. bureau of ethnology.

—Prof. E. D. Cope of Philadelphia is about to publish a monograph on the recent batrachians and reptiles of North America, as a bulletin of the national museum. It will contain descriptions of all the species so far known, many of which will be figured, together with an extensive discussion of the osteology of the several groups, and a sketch of the soft anatomy of the leading types.

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.*

International copyright.

MR. APPLETON MORGAN, in his letter upon international copyright in *Science* for March 5, says, "While always an enthusiastic advocate of an international copyright as a matter of abstract justice to British authors, I have never been able to satisfy myself of the constitutional right of congress to enact a separate bill for the purpose of effecting one." I do not intend to attempt, in this letter, to convince Mr. Morgan that the enactment of such a bill would be constitutional, but I think it may not be without interest to the readers of *Science* to point out that the passage in the constitution which grants congress the power to "secure to authors and inventors the exclusive right to their respective writings and discoveries" has been expounded to mean, of necessity, *all* authors and inventors, without regard to nationality.

Edward L. Andrews, Esq., as the representative of the Copyright association, argued before the senate committee on the library, in 1872, that, as American authors were not specified in this clause, the word 'authors' must be taken to mean *all* authors, wherever resident, and therefore the constitution "in this respect is mandatory in its character." But Mr. Andrews was not the first person to argue this construction of the constitution. Thirty-five years earlier this construction had so distinguished an advocate as Mr. Henry Clay. During the copyright agitation of 1836-37 in England, certain British authors sent to the United States an 'address' containing a petition to congress to grant to them "the exclusive benefit of their writings within the United States." This petition, which bears the signatures of fifty-six authors of England and Ireland, — a remarkable list of names, including Carlyle, Disraeli (father and son), Bulwer, the poets Southey, Thomas Moore, Rogers, Campbell, Chalmers and Cunningham, Harriet Martineau and Mary Somerville, besides others equally famous, — was presented to the senate by Mr. Clay on Thursday, Feb. 2, 1837. After calling attention to the distinguished names appended to the document, and explaining that it represented that the works of British authors were published in the United States without any compensation being made to them for their copyrights, and that they were frequently altered and mutilated so as to affect injuriously their reputations, because of which grievances they petitioned the passage of a protective law, he commended the address to the attentive and friendly consideration of the senate, and closed with these words: "Indeed, I do not see any ground of just objection, either in the constitution or in sound policy, to the passage of a law tendering to all foreign nations reciprocal security for literary property." This petition was referred to a select committee, which reported Feb. 16, through Mr. Clay, and asked leave to introduce a bill granting copyright to the authors of Great Britain and France, which was the first international-copyright bill presented to congress. The last paragraph of this report contains Mr. Clay's argument, referred to above, and reads as follows: "With respect to the constitutional power to pass the proposed bill, the committee entertain no doubt, and congress, as be-