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 name and address of applicants should be given in full, so that answers will go direct to them. The "Exchange" column is likewise open.

VOL. XIV. NEW YORK, NOVEMBER 8, 1889. No. 353

CONTENTS:

MEETING OF THE INTERNATIONAL CONGRESS OF ZOÖLOGISTS AT PARIS, AUG. 5–11, 1889.

THIS was the first general gathering of zoölogists from nearly all the countries of the Old and New World, and was one of the many notable congresses called into being on the occasion of the Universal Exposition of 1889. It should be said that the initiative was taken by the Société Zoologique de France. The sessions were held from the 5th to the 11th of August, under the presidency of Professor Alphonse Milne-Edwards. The opening meeting for organization was held on the afternoon of Aug. 5, and was largely attended. Among the more distinguished *savants* present were the venerable De Quatrefages, Retzius of Stockholm, Topinard, Rütimeyer of Basel, Hubrecht of Utrecht, Fritsch of Prague, besides well-known naturalists from Belgium, Moscow, Kiew, Budapesth, Prague, Berlin, London, Geneva, Cairo, Malta, Algeria, southern France, Scotland, Ireland, Cape Town, and the United States. Papers were read by scientists of all nationalities; so that the meeting was truly cosmopolitan in its nature, though, naturally enough, French was the language in which the papers were read. Here it might be observed, that, though many of the papers were presented by foreigners, but few of the speakers used notes or manuscript; and we were, on the whole, struck with the fluency, readiness, and elegance of diction, and the lack of hesitation, clumsiness, and verbosity. The audience consisted mainly of experts; and the papers, with the ensuing discussions — in fact, all the work of the congress was performed, as an American would say, in a thoroughly business-like manner. The sessions began promptly at 9 o'clock, and adjourned at noon. The afternoons were devoted to visits to the new and commodious museum building in the Jardin des Plantes, the Ecole des Mines, to portions of the exposition of special interest to the members, where, among other attractions, the Prince of Monaco exhibited his dredging and other apparatus for deep-sea research. Private collections were thrown open to individual members; private hospitality shown at the noon hour for breakfast, in France, as well as at dinner-time; while on three of the evenings the members attended the delightful *soirées* at the houses of Professor Milne-Edwards, of Prince Roland Bonaparte, and M. Certes, inspector-general of finances; and on other evenings they mingled with the host of *savants*, teachers, and students at the notable *soirées* given by M. Guyot, the minister of public works, and the colossal reception at the Hotel de Ville given by the municipality of Paris.

To return to more prosaic matters: one of the principal topics discussed in the meetings, and which was especially considered in the opening presidential address, was deep-sea explorations, while most of the papers were of a general nature, giving methods and results. The special topics for discussion, and which were announced beforehand, the reports being in print and distributed at the meetings, were the following: 1. The rules to be adopted for the nomenclature of organized beings; the adoption of an international scientific language (reporter, Dr. R. Blanchard). 2. Determination of the regions of the globe of which the fauna is insufficiently known, and which need exploration; indications of the method of research, of the preparation and preservation of animals (reporter, Dr. P. Fischer). 3. The services rendered by embryology to the classification of animals (reporter, Professor E. Perrier). 4. The relations which exist between the existing and fossil faunæ (reporter, Dr. Filhol).

The discussion on nomenclature was not introduced until the last days of the session. The report of Professor Blanchard was conservative, excellent, and generally accepted by those present, and should be widely disseminated; the law of priority was adopted, beginning with the year 1722, the date of publication of Lang's work; while little approbation was given by the congress to trinomial nomenclature, although the report favored it in special cases.

The idea of such congresses, it seems to us, was a happy conception; and so successful were its results, that, we were told by Professor Milne-Edwards, another will be called in three years. The great value of such international gatherings to a foreigner is the stimulus and pleasure resulting from meeting distinguished workers in other than his own narrow specialty, the friendships formed, the solution of the personal equation so to speak, and the examination of private and public collections and libraries in a metropolis. To an American the occasion was one of great interest and lasting value, and one cannot return to his work without pricking in "some flowers of that he hath learned abroad."

A. S. P.

HEALTH MATTERS.

Electrical Injuries.

AT a meeting of the Practitioners' Society, Oct. 4, 1889, Charles L. Dana, A.M., M.D., of New York, read a paper on the above subject. As he pointed out, with the introduction of new industrial methods we are meeting accidents and injuries of all grades of severity; and in time there will be associated with electrical systems, classes of injuries some of which will be perhaps peculiar to them; some will resemble those known as railway brain and railway spine, traumatic hysteria, and other neuroses or psychoses; while a large number will be only of the ordinary surgical character.

The telegraph and telephone produce peculiar neuroses, due to the demand made upon the nervous system of the operator, the results being telegraphers' cramp, aural and mental disorders of telephone transmitters, etc. Most of the observed cases of this electrical injury come from the apparatus carrying electrical currents for lighting and power.

Such currents have varying effects. In some cases they merely

stun the victim, and burn the parts in contact with the wire; in others they have been known to produce permanent paralytic effects (of such cases, however, there are only two on record); in still other instances almost instantaneous death results; while sometimes a mental shock is produced, which affects the system just as other shocks do, causing conditions known as traumatic hysteria or neurasthenia.

The number of fatal accidents from electrical currents during the past ten years has been variously estimated at from 100 to 200.

The electrical current burns or not, according to the dryness of the skin and clothes and the consequent degree of resistance. With a dry skin there is more burning, less penetration, less shock, and less danger of death. With a wet skin and good connections there is little burning and more serious internal effect. Dr. Biggs has noted that most of the fatal electrical accidents have occurred on or after rainy days.

Dr. William C. Thompson recently reported a curious case of traumatic hysteria. A man, aged fifty, not long ago saw an Italian killed by an electric wire. Two weeks later, while walking along the street, an electric wire which had just been cut fell, and struck his head. He grasped it in his hand, and fell down. He says that he knew nothing until a few hours later, when he found himself in the hospital. He then had right hemiplegia and hemianæsthesia, including the senses of smell and taste. There was limitation of the visual and auditory fields, bone deafness, pharyngeal anæsthesia, and all the stigmata of typical hysteria. The wire which struck him was a "dead" one; and the blow was slight, and caused no contusion.

The fact is, that the practical introduction of electricity has been attended with much less fatality than that caused by gas, steam, railroads, and many other of the inventions of modern life. For example: in France, among 223,000 railway employees, there is an annual average of 239.5 killed and 1,850.4 wounded; in Germany there are 1.35 per 1,000 of railway-servants killed, and 3.09 per 1,000 wounded; in England the annual mortality is 2.43 per cent; in the United States among 418,957 employees, in 1880, there were 923 killed and 3,617 injured, — a higher rate than anywhere in Europe (United States Census). In coal-mining the ratio in France is 1.56 per 1,000 of killed, 8.87 per 1,000 of wounded.

Some of the points which Dr. Dana wished to make in the article, which is published in full in *The Medical Record*, are, the extraordinary increase now going on in the practical application of electricity, there being already nearly $100,000,000 invested in lights and power alone; a practically new class of injuries met in connection with the new industries. Such injuries have been heretofore produced only by lightning, and they have been consequently rare. These injuries are not numerous or serious as compared with those met with in connection with other great industries. There have been in ten years only about 100 deaths in the whole world from artificial electrical currents. The railroad kills annually over 2,500 people (2,541 in 1880), and injures about 6,000, in the United States alone. Electrical currents produce three kinds of severe accidents: they kill at once; or they burn severely; or, by the mental and physical shock, they cause traumatic neurosis. Usually if they burn severely they do not kill: hence, practically, the rule is, if contact with electrical wires does not kill, the victim gets only a burn or a harmless shock. In very rare cases the current seems to affect the nerves or nerve-centres, causing paralysis. The minimum current safe to receive is not definitely known. Probably eight hundred to one thousand volts of continuous current, and a third less of alternating current, would not be fatal. The wires for lighting and for power carry the more dangerous currents.

THE BEHAVIOR OF THE GERMS OF CHOLERA, TYPHOID-FEVER, AND TUBERCULOSIS IN MILK, BUTTER, WHEY, AND CHEESE. — Among the numerous labors of the Reichsgesundheitsamt has been that of determining the behavior of certain germs of disease in various articles of food. Milk is one of the most common articles of diet; and one of the health-office collaborators, L. Heim of Würzburg, has lately concluded a lengthened inquiry into the relations of the bacilli of tuberculosis, cholera, and typhoid-fever to it, and its products, whey, butter, and cheese. That milk is a favorite medium for dissemination of disease is well known; and Koch, among others, has shown that it is peculiarly adapted for this purpose. As regards cholera, the germs of the disease were still viable after remaining for six days in milk that had undergone no antisepticizing processes: in milk of the same character that had been kept in the ice-chest, on the other hand, no living bacteria were found at the end of three days. This part of the inquiry shows that cholera bacteria remain active in fresh milk the whole length of time it is customary to keep it, and that they do not lose their dangerous quality for some days after the milk has become sour. The same germs were found active under some circumstances, even at the end of a month. In ordinary strong cheese they did not retain their viability over a day, neither did they in unripe cheese. The bacilli of typhoid were alive and capable of development in milk at the end of thirty-five days, but no longer so at the end of forty-eight days; in butter they remained active between three and four weeks, in cheese only three days, and in whey only during the first day. Tubercle bacilli remained capable of development for ten days in fresh milk; in milk gradually undergoing decomposition they lost their power in a period varying between ten days and four weeks. In butter, on the other hand, they retained their full power at the end of four weeks; in whey and cheese, after two weeks, but not after four weeks. The practical importance of the investigations is so obvious as scarcely to need pointing out; and their bearing on the use of milk, the preservation, carriage, preparation, and sale of it and its products, is equally obvious. Something has been done, much remains to be done, to stop the ravages of disease; and the labors of Dr. Heim are another step forward.

STERILIZED MILK DELIVERED TO PATIENTS IN THEIR DWELLINGS. — Since Aug. 1, sterilized milk has been furnished to children under treatment at the Philadelphia Polyclinic. The milk, says *Medical News*, is sterilized by the Visiting Nurse Society of Philadelphia, and taken to the child by the nurse in attendance, in the bottles in which it is prepared. Milk and bottles are furnished the parents at cost. The results have been excellent.

HEALTH OF NEW YORK AND LONDON COMPARED. — Some interesting points of comparison between the health of London and that of New York are summarized in *The Boston Medical and Surgical Journal*. The deaths in London last year numbered 78,848, or 18.5 per 1,000; in New York, 40,175, or 26.33; and in Paris, 22.6 per 1,000. The birth returns for New York are incomplete; but the birth-rate in London was 30.7 per 1,000; in Paris, 27.0. The male births in Paris were 30,723; the female births, 29,913. In London the numbers were, males, 66,629; females, 64,451: but in the total population of London there is a majority of 250 females. Premature births in New York numbered 1,155; in London, 2,099. To be equal, the figures referring to New York should only be a third. New York compares unfavorably with London in the matter of suicides. There were 247 in New York, and 400 in London. Between 800 and 900 persons take their own lives in Paris every year. In New York 1,138 were killed by accidents; and in London, 2,516. There were only 1,892 deaths from bronchitis in New York, while in London there were 10,085. But while some hundreds die every year in London as the result of idleness and obesity, 61 deaths were recorded last year from starvation. A decreased death-rate is invariably accompanied by a lower birth-rate. The deaths in London last year were the lowest on record; the births, the lowest since 1841. In the western districts, where the wealthy reside, and where the degree of comfort is high, the deaths fell to 16.4, and the births to 25.5; but in the impoverished and overcrowded east, where the poor never get a breath of fresh air, and are huddled together in unhealthy alleys, the deaths rose to 27.2, and the births to 36.5. The people least able to support children are the most prolific; and the higher the degree of social comfort and well-being, the less the increase of population.

MINERAL WATERS. — The Paris correspondent of the *Boston Medical and Surgical Journal* says, that, of the numerous international congresses that have been held in Paris since the opening of the exhibition in May last, there has been none more important or interesting than the Congress of Hydrology, which has just terminated its meetings. The object of this congress was to eluci-

date a certain number of those obscure problems which concern the nature and therapeutic value of mineral waters. One of the most original memoirs produced at the congress was that of Dr. Schlemmer, on microbes and thermal waters. According to the author, there is found a certain number of microbes in these waters; but, far from offering any danger. the microbes of mineral waters seem, on the contrary, to possess beneficial properties. It is thus that in certain springs of Vichy, Chantemesse and Frémont have isolated a micrococcus possessing a most pronounced digestive power on albuminoid alimentary substances, which it transforms into peptones. With the knowledge of this fact, it will be seen that it is impossible to imitate this natural mineral water by the aid of the bicarbonate of soda. No artificial chemical combination would be capable of conferring on a water this microorganic life, any more than of conferring upon it the electro-dynamism of telluric elaboration. The origin of the gases contained in the mineral waters was well demonstrated by Dr. Labat. He stated that whether they proceed from the air or from watery vapor, or whether they are manifestations of the soil or of volcanoes, the gases do not ordinarily play a preponderating *rôle* in the curative action of mineral waters. Nevertheless, nitrogen is an agent distinctly sedative and anti-catarrhal; sulphuretted hydrogen, a modificator of the skin and of mucous membranes; carbonic acid, an excitant of the blood-vessels and nerves. It is capable, for instance, of arousing the languishing functions of the digestive mucous membrane.

BOOK-REVIEWS.

The Life-Work of the Author of Uncle Tom's Cabin. By FLORINE THAYER MCCRAY. New York, Funk & Wagnalls. 12°. $2.

THIS book contains both a biography of Mrs. Stowe and an analysis of her principal works. It is written with the approbation of the Stowe family, who have supplied information on certain points. It contains much that is interesting, and, so far as facts go, gives a fair picture of Mrs. Stowe and her work. But it is marred by an overflow of "gush," which is neither pleasing nor improving to the reader. Mrs. McCray is so enthusiastic over her theme that she can hardly write soberly, even in the most commonplace passages, and some of the most ordinary personages assume in her eyes the character of heroes. Thus, she says that certain sermons on intemperance by Lyman Beecher "shook the world," and that Professor Stowe on another occasion "spoke eloquently and with magnetic force," and "stood forth a commanding figure upon the arena of the world's advancement." Of course, Mrs. Stowe herself is still more highly lauded. The book is a handsome one, but is marred by bad punctuation and by frequent misspellings, such as "Arabian Knights," "Thomas Carlisle" for "Thomas Carlyle," Henrick Heine" for "Heinrich Heine," etc. Still the work has an interest from its subject, and also from the sincerity and earnestness of its author.

Hypnotism: Its History and Present Development. By FREDERIK BJÖRNSTRÖM, M.D. Tr. by Baron Nils Posse, M.G. New York, Humboldt Publ. Co. 8°. 75 cents.

THE general aspects and methods of hypnotism may be now regarded as sufficiently well understood to make a detailed review of the contents of a general *résumé* of the subject unnecessary. As, however, the available literature of standard merit in English is small, and much of this is in the way of translations, it may be useful to call attention to the present essay of an eminent Swedish physician, especially as its general accessibility will provide it with a large body of readers. The work is purely expository in character, and offers about as convenient an introduction to the subject as we have in English. The topics are well selected, the points clearly stated, and the whole fairly represents the present status of investigation upon this vexed phenomenon. A general historical introduction is followed by a chapter defining the ordinary hypnotic condition, according to various authorities. The method of hypnotizing and the stages of hypnotism are next interestingly discussed. The so-called "unilateral hypnotism" is needlessly honored with a special chapter, though the physical and the psychical effects of hypnotism are more satisfactorily treated in succeeding chapters. As is proper, most space is given over to the phenomena of suggestion; in which, however, the selection of cases is not as judicious as it might be, considering the needs of the general reader. The concluding chapters treat of hypnotism as a remedial agent, as a moral remedy, in relation to the law, and, finally, its abuses and dangers. Considering the short space at command, the topics are fairly presented except the last, which concerns itself rather uselessly with Parisian methods of deceiving the credulous. The chief defect of the work, however, lies in its placing too nearly on a par views and theories the evidence for which is still regarded by the most able investigators as very different. This is true of the "hemi-hypnotic" phenomena; but it is still truer of the "mental suggestion," or telepathic experiments, to which entirely too much space is devoted. This somewhat uncritical treatment of the outlying fields of hypnotism is certainly the chief defect of the work. In spite of this, however, the work is a valuable addition to the easily accessible literature of the topic, and can safely be placed in the hands of the general reader, especially if he bring to the reading of it the understanding that the views expressed are partly individual, and partly prematurely positive.

Practical Electric Bell Fitting. By F. C. ALLSOP. London and New York, Spon. 12°. $1.25.

THIS treatise on the fitting-up of electric bells and the apparatus necessary therefor supplies just the information on the subject that would naturally be needed by the average workman. Beginning with the proper way to join two pieces of wire, it goes carefully through all the ramifications of the subject, explaining, in a manner not easily misunderstood, each step, by means of well-worded text and a sufficient number of illustrations. The author shows that he not only thoroughly understands his subject, but that he knows how to treat it clearly and exhaustively without saying a word too much. Much of the thoroughness of the treatise is due, no doubt, to the manner in which it first appeared, or, rather, to the way in which it grew from that part of it which first appeared. The work was first published as a series of papers in a technical journal, and their favorable reception induced the author to re-issue it in book form, taking the opportunity to revise it according to the light gained by the comment and criticism accorded it in its serial form. Much additional matter was added also, the result of numerous questions addressed to him on the subject from time to time.

The points treated are grouped as follows. The first chapter is devoted to wiring, soldering, and joining wires, and earth connections. This is followed by a chapter on pushes, pulls, contacts, and switches, and another on bells, relays, and indicators. Batteries and the magneto bell have each a chapter devoted to them, followed by one on connecting-up. The last two chapters treat of the localizing of faults and of portable sets of apparatus. The book contains nearly a hundred and fifty explanatory engravings.

Proceedings of the Society for Psychical Research. Pt. XIV. June, 1889. London, Soc. Psych. Research. 8°.

THE varied contents of this issue testify to the vigorous activity of the society in the directions inaugurated in former publications. The most interesting and novel contribution is upon the curious phenomena of crystal-vision, an account of which will appear elsewhere in *Science*. The president's address is very brief, and contains hardly more than a report of progress, with renewed protests against misinterpretation of the society's work. A paper by the late Edmund Gurney, completed by F. W. H. Myers, treats of apparitions occurring soon after death, and in part refers the frequency of such apparitions to the emotional disturbances connected with the decease of a friend, and in part considers the matter as of super-normal significance. It cannot be said that any essential advance is made in the present discussion of cases. Mr. Myers also writes suggestively, though with a disproportion of introduction to thesis, upon the Dæmon of Socrates, explaining this vexed question as the appearance of the unconscious mind of Socrates through the medium of spoken language, just as the subconscious "strata of personality" reveal themselves in automatic writing. In the supplement we have an account of some very heterogeneous