Beds of Indiana and an Inquiry as to the Cause of the Same, Joseph Moore; A Simple Air Thermometer for the Determination of High Temperatures, W. A. Noyes; Test of the Torsional Strength of a Steel Shaft, Thomas Gray; An Extreme Case of Parasitism, Robert Hessler; Exhibition and Explanation of a Geological Chart, Elwood P. Cubberly; Local Variations, C. H. Eigenmann; Botanical Field-Work in Western Idaho, D. T. MacDougal.

When this stage on the programme was reached, the hour for noon adjournment arrived. It was then decided to meet in three sections in the afternoon, in order to accommodate members who were present with papers. The next morning, it was understood, the general sessions would be resumed. The three sections organized were, A, mathematics, physics, chemistry, and geology; B, botany; C, zoölogy and anthropology. In them the following papers were presented: —

The Quaternion Treatment of the Motion of Two or More Bodies under the Law of Gravitation, A. S. Hathaway; The Electrical Oxidation of Glycerin, W. E. Stone and H. N. McCoy; Notes Concerning Tests of the Purdue Experimental Locomotive, W. F. M. Goss; The Electrostatic Theory of Cohesion and Van der Waal's Equation, Reginald A. Fessenden; On Sulphon-Pthaleins, Walter Jones; Quartz Suspensions, Benj. W. Snow; Observations on Glacial and Pre-Glacial Erosion at Richmond, Indiana, Joseph Moore; A Modification of Grandeau's Method for Determination of Humus in Soils, H. A. Huston and F. W. McBride; Experiments with and Phenomena of Vacuum Tubes, R. A. Fessenden; The Extraction of Xylan from Straw in the Manufacture of Paper, W. E. Stone and W. H. Test; The Electro-Magnetic Inertia of a Large Magnet, Thomas Gray; The Determination of Chlorine in Natural Waters, W. A. Noyes; Some New Electrical Apparatus, R. A. Fessenden; Thiofurfurol and its Condensation Products, W. E. Stone and Clinton Dickson; On the Construction and Use of a Bolometer, B. W. Snow; On the Determination of Valence, P. S. Baker; An Application of Mathematics in Botany, Katharine E. Golden; On the Fertilization and Development of the Embryo in *Senecio aureus*, D. M. Mottier; Distribution of North American Cactaceæ (by title), John M. Coulter; *Marchantia polymorpha*, not a Typical or Representative Liverwort, L. M. Underwood; Notes Concerning Certain Plants of the South-Western Counties of Indiana, John S. Wright; Spines and Epidermis of the Cactaceæ (by title), E. B. Uline; Preliminary Notes on the Genus Cactus, E. M. Fisher; An Auxanometer for the Registration of Growth of Stems in Thickness, Katharine E. Golden; The Apical Growth of the Thallus of *Fucus vesiculosus*, D. M. Mottier; Symbiosis in Orchidaceæ, M. B. Thomas; Notes on Pediastrum, W. L. Bray; The Genus Corallorhiza, M. B. Thomas; Notes on Root Tubercles of Indigenous and Exogenous Legumes in Virgin Soil of the North West (by title), H. L. Bolley; Notes on Archæology in Mexico, J. T. Scovell; Notes on the Loss of the Vomerine Teeth with Age in the Males of the Salamander, *Desmognathus fusca* (by title), F. C. Test; Modern Geographical Distribution of Insects in Indiana (by title), F. M. Webster; New Species of Indiana Hymenoptera, reared at LaFayette, Indiana (by title), F. M. Webster; Description and Elevation of Mount Orizaba, J. T. Scovell; The Climate and Glaciers of Mounts Orizaba and Popocatepetl, J. T. Scovell; A Mite, probably *Hypoderas columbæ*, Parasitic in the Pigeon, W. W. Norman; The Locustidæ of Indiana with Description of New Species, W. S. Blatchley; Early Stages in the Development of Cymatogaster, C. H. Eigenmann; Some Remarks Regarding the Embryology of Amphiuma, O. P. Hay; Some Structural Peculiarities of Pacific Slope Fishes (by title), A. B. Ulrey; Peculiar Death of an Oriole (by title), T. B. Redding; The Range of the American Crossbill (*Loxia curvirostra minor*) in the Ohio Valley, with Notes on its Unusual Occurrence in Summer, A. W. Butler; A Note on Loxia curvirostra, W. S. Blatchley; Notice of a Terrapin to be Restored to the Fauna of Indiana, O. P. Hay; A Migration of Birds and One of Insects, T. B. Redding; The South American Catfishes Belonging to Cornell University (by title), E. M. Kindle; Notes on the Genus Lytta, W. P. Shannon; The Icthyologic Features of the Black Hills Region, B. W. Evermann; Explorations in Western Canada, C. H. Eigenmann.

In the evening the Academy convened to listen to the address of President Campbell on "The Inter-Dependence of Liberal Pursuits."

At the general Session of the second day the following papers were presented: —

Ancient Earthworks near Anderson, Indiana, Francis A. Walker; The Work of the U. S. Fish Commission Steamer Albatross, in the North Pacific and Behring Sea in 1892, B. W. Evermann; A Thermo Regulator for Rooms Heated by Steam, J. C. Arthur; Archæology of Tippecanoe County, O. J. Craig; Some Indian Camping Sites near Brookville, A. W. Butler; Relation of Kings County Traps to Those of Cumberland County, N.S., V. F. Marsters; The Traps of Red Head, N.B., V. F. Marsters; On Birds in Western Texas and Southern New Mexico (by title), A. W. Butler; An Account of Vegetable and Mineral Substances that Fell in a Snow-Storm in LaPorte County, Jan. 8–9, 1892 (by title), A. N. Somers; How a Tendril Coils, D. T. MacDougal; Remarkable Pre-Historic Relic, E. Pleas; The Bruns' Group of Mounds, H. M. Stoops; Some Points in the Geology of Mount Orizaba (by title), J. T. Scovell; Two-Ocean Pass (by title), B. W. Evermann; The Blattidæ and Phasmidæ of Indiana, W. S. Blatchley; Forestry Exhibit of Indiana at the Columbian Exposition, Stanley Coulter; The Yolk Nucleus, J. W. Hubbard; Some Causes Acting Physiologically toward the Destruction of Trees in Cities, J. C. Arthur; British Columbia Glaciers, C. H. Eigenmann; A State Biological Survey — a Suggestion for Our Spring Meeting, L. M. Underwood; The Mounds of Brookville Township, Franklin County, Ind., H. M. Stoops; How the Colleges Could Aid the Public Schools in Teaching Biological Subjects, W. W. Norman; Notes on the Flora of the Chilhowee and Great Smoky Mountains, Stanley Coulter; The Need of a Large Library of Reference in Cryptogamic Botany in Indiana, What the Colleges Are Doing to Supply the Deficiency, L. M. Underwood; Exhibition of a Series of Grouse and Ptarmigan from Alaska, B. W. Evermann; Botanical Assemblies in the United States Announced for the Year 1893, J. C. Arthur; Development of Ovule in Aster and Solidago (by title), G. W. Martin; Remarks on Archæological Map-Making (by title), A. W. Butler; The "Lilly Herbarium" and Its Work, John S. Wright; Additional Facts Regarding Forest Distribution in Indiana, Stanley Coulter; Rotary Blowers, John T. Wilkin; Some Effects of Mutilation on the Forms of Leaf and Sex of *Morus alba* and *Morus nigra* (by title), A. N. Somers; The Crawford Mound (by title), H. M. Stoops.

LIFE-SAVING.

BY DELOS FALL, ALBION, MICH.

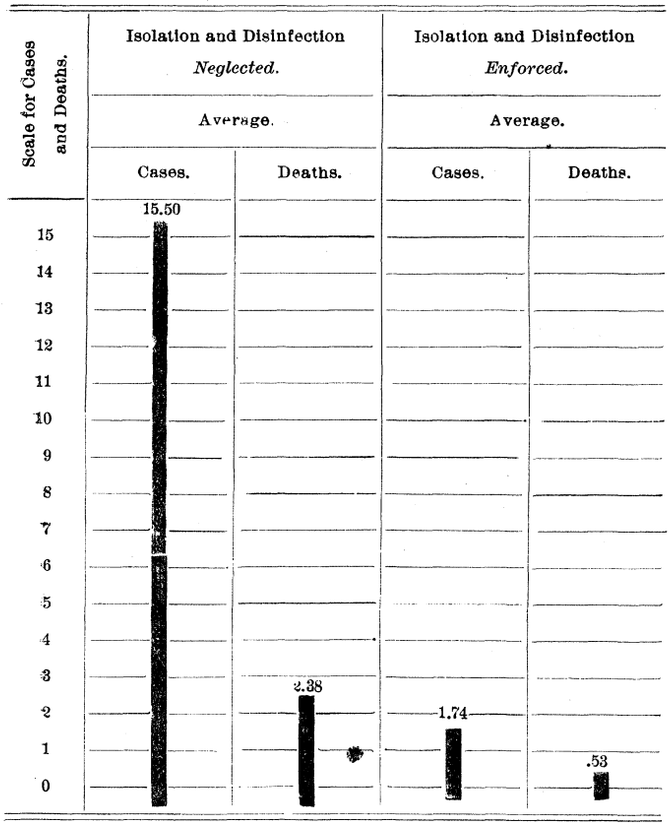
SANITARIANS are in the habit frequently of advancing claims in regard to the practical value of their work, resulting, they say, in a great lessening of sickness and the actual saving of many lives. For example, in a carefully prepared paper, read before the Sanitary Convention at Vicksburg, Dr. Baker, secretary of the Michigan State Board of Health, gave official statistics and evidence, which he summarized as follows: —

"The record of the great saving of human life and health in Michigan in recent years is one to which, it seems to me, the State and local boards of health in Michigan can justly 'point with pride.' It is a record of the saving of over one hundred lives per year from small-pox, four hundred lives per year saved from death by scarlet-fever, and nearly six hundred lives per year saved from death by diphtheria — an aggregate of eleven hundred lives per year, or three lives per day saved from these three diseases! This is a record which we ask to have examined, and which we are willing to have compared with that of the man who 'made two blades of grass grow where only one grew before.'"

It has occurred to the writer that even scientific workers look upon such statements with a large degree of allowance. They can be demonstrated, however, as the following will illustrate: The table below is compiled from reports of local health officers to the secretary of the State Board of Health relative to the cases of sickness and deaths from diphtheria in Michigan during

the year 1888. The reports taken for this study deal with 92 outbreaks. In 34 of these the sanitary precautions of isolation and disinfection were neglected; in 58 outbreaks these preventative measures were enforced.

Diphtheria in Mighigan in 1888: Exhibiting the average numbers of cases and deaths *per outbreak*; in those outbreaks in which isolation and disinfection were both *neglected*; and in those outbreaks in which both were *enforced*. Compiled in the office of the Secretary of the State Board of Health, from reports made by local health officers.



It will be seen that if in all the 92 cases isolation and disinfection had been neglected, the total number of cases of sickness would have been $92 \times 15.5 = 1426$; and the number of deaths would have been $92 \times 2.38 = 219$.

On the other hand, if all had been done that could have been done, if all possible means had been employed, there would have been $92 \times 1.74 = 160$ cases of sickness, and $92 \times .53 = 49$ deaths. The saving in sickness would have been $1426 - 160$ cases, and the saving of life would have been $219 - 49 = 170$.

But the whole number of outbreaks of this disease in Michigan during the year was 311. Applying the same reasoning as before, first, if isolation and disinfection were neglected in every case, there would have been $311 \times 15.5 = 4820$ cases of sickness and $311 \times 2.38 = 740$ deaths. On the other hand, if all had been done that ought to have been done, there would have resulted $311 \times 1.74 = 541$ cases of sickness and $311 \times .53 = 171$ deaths. The total saving in sickness would have been $4820 - 541 = 4279$, and the saving of life would have been $740 - 171 = 569$.

These figures are at the same time a justification of the claims which health officers make, suggested above, and a demonstration of the efficacy of the means employed, isolation and disinfection, in producing these results.

NOTES AND NEWS.

THE partnership heretofore existing between Geo. L. English, E. C Atkinson, and Wm. Niven, as Geo. L. English & Co., has been dissolved by mutual consent. Geo. L. English, having purchased all the stock, good-will, and fixtures, will continue the business under the same firm name. The firm has removed to a new ground-floor store, No. 64 East 12th Street, five doors east of Broadway, three doors west of Fourth Avenue. They have purchased the business of Mr. Philip Fuchs, who for ten years was in the employ of Tiffany & Co., and more recently has been in business for himself. Mr. Fuchs has entered their employ, and a complete lapidary equipment, including five lathes, has been put in the new store. Very much more attention will be given to gems, especially rare stones, and they propose materially enlarging this department and carrying a good stock. Among gems now on hand are willemite, oligoclase, beryllonite, diopside, sphene, obsidian, phenacite, demantoid, peridote, prehnite, hiddenite, garnet, amethyst, cat's-eye, aquamarine, golden beryl, emerald, chrysoberyl, moonstone, rubellite, turquois, zircon, opal, sapphire. Any other gem will be secured. Mounting done to order. Microscopical sections of rocks and minerals will be manufactured on the premises and a good stock kept on hand. Their enlarging stock of meteorites will soon be worthy of prominence.

— During the past summer courses of instruction were offered by professors and instructors of Cornell University in Greek, Latin, French, German, English, philosophy, mathematics, physics, chemistry, botany, drawing, and physical training. In all there were a hundred and fifteen in attendance, representing twenty-two States and Territories, Canada, and Japan; and of these far the greater part were teachers and advanced students. The private venture, begun so auspiciously, has now taken a more permanent form, and the school has been made an integral part of the university. The list of courses offered for the summer of 1893 is greatly increased, and among the additions to the corps of instruction of last summer are Professors Wheeler and Bristol and Dr. Laird in Greek, Professor Bennet in Latin, Professor Smith in elocution and oratory, Professor Tichener in psychology, Professor Williams in pedagogy, Professor Wilcox and Dr. Hull in social and economic science, Professor McMahon in mathematics, and Professor Hitchcock in physical training. Summer courses in the school of law will also be offered this year for the first time, instruction being given by the entire faculty of the school.

— The third annual meeting of the American Morphological Society was held at Princeton College, Dec. 27 and 28, under the presidency of Dr. C. O. Whitman of the University of Chicago. The meeting was well attended, and several additions were made to the list of members, which includes the majority of the active workers in the department of animal morphology in this country. The following is a list of the papers presented at the meeting: Dr. E. B. Wilson, Columbia College, The Cleavage of the Ovum and the Teloblasts of Amphioxus; Dr. C. W. Stiles, the Agricultural Department, Washington, The Topographical Anatomy in the Family Tæniadæ; Dr. E. O. Jordan, University of Chicago, The Maturation and Fertilization of the Egg of the Newt; Professor E. D. Cope, Philadelphia, False Elbow-Joints in Man and the Horse; Mr. Arthur Willey, Columbia College, On Acinetæ Parasitic in the Buccal Tube of Diplosoma; Dr. C. B. Davenport, Harvard College, On the Development of the Cerata of Eolis; Dr. H. B. Ward, University of Michigan, On the Host of Nectonema; Dr. C. O. Whitman, University of Chicago, The Metamerism of Clepsine; Dr. W. B. Scott, Princeton College, The Evolution of the Premolars; Dr. H. Ayers, the Lake Laboratory, Milwaukee, The Ending of the Auditory Nerves in the Hair-Cells; Dr. E. A. Andrews, Johns Hopkins University, Notice of a New Sort of Amphioxus; Professor A. E. Verrill, Yale College, Some New Forms of Menerteans; Dr. T. H. Morgan, Bryn Mawr College, Preliminary Note on Balanoglossus; Professor B. Sharp, Academy of Natural Sciences, Philadelphia, Joint-Formation among the Invertebrata; Professor W. A. Locy, Lake Forest University, The Formation of the Medullary Groove and Some Other Features of Embryonic Development in the Elasmobranchs. The officers of the Society for the current year are: President, Dr. C. O. Whitman, University of Chicago; vice-president, Dr. E. B. Wilson, Columbia College; secretary and treasurer, Dr. J. Playfair McMurrich, University of Cincinnati; members of the executive committee elected from the society at large, Dr. T. H. Morgan, Bryn Mawr College, and Dr. C. B. Davenport, Harvard College.