

E. O. Lovett; 'A Solution of the Biquadratic by Binomial Resolvents,' by Dr. G. P. Starkweather; 'Note on Special Regular Reticulations,' by Professor E. W. Davis; 'Limitations of Greek Arithmetic,' by Mr. H. E. Hawkes; 'Maxima and Minima of Functions of Several Variables,' by Professor James Pierpont; 'On the Intersections of Plane Curves,' by Mr. F. S. Macaulay; 'Elliott's Algebra of Quantities,' by Professor H. S. White; 'Hadamard's Geometry,' by Professor F. Morley; 'Further Note on Euler's Use of i to Represent an Imaginary,' by Professor W. W. Beman; and 'Note on Napier's Rules of Circular Parts,' by Professor E. O. Lovett.

SOCIETIES AND ACADEMIES.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

WE have on frequent occasions during the past year called attention to the preparations for the anniversary meeting of the American Association which takes place next week at Boston. We now subjoin the programs of the sections, to which undoubtedly important additions will be made at the time of the meeting.

SECTION A. — MATHEMATICS AND ASTRONOMY.

Address of the Vice-President: Development of Astronomical Photography. By Professor E. E. Barnard, Yerkes Observatory.

1. Three Years' Experience in making Astronomy Popular. By Miss Mary Proctor, New York City.

2. Personal Equations during the Past Century. By Professor Truman H. Safford, Williams College, Williamstown, Mass.

3. Triangles whose Sides and Areas are expressed by Whole Numbers. By Professor Truman H. Safford, Williams College.

4. On Rational Right-Angled Triangles. By Dr. Artemas Martin, U. S. Coast Survey, Washington, D. C.

5. Behavior of the Atmospheres of Gas and Vapor—Generating Globes in Celestial Space. By Dr. J. Woodbridge Davis, Woodbridge School, New York City.

6. Graphical Logic. By Professor Ellen Hayes, Wellesley College, Wellesley, Mass.

7. Illustrations of the Comitant Method of constructing the Imaginary Loci of Analytic Geometry, so as to render their Properties evident to the Eye. By Professor Frank H. Loud, Colorado College, Colorado Springs.

8. The Mass and Moments of Inertia of the Earth's Atmosphere. By Professor R. S. Woodward, Columbia University, New York City.

9. A New Form of Pendulum for measuring the Acceleration of Gravity. By Professor R. S. Woodward, Columbia University.

10. The Gravitation Constant and the Mean Density of the Earth. By Professor R. S. Woodward, Columbia University.

11. The Substitution Groups of Order Fifty. By Dr. G. A. Miller, Cornell University, Ithaca, N. Y.

12. Correction of Local Error in Stellar Photometry. By Henry M. Parkhurst, Brooklyn, N. Y.

13. Variation of Latitude and the Constant of Aberration from Observations at Columbia University Observatory, during the years 1892–1898. By Professors J. K. Rees, Harold Jacoby and Dr. H. S. Davis. Read by Professor J. K. Rees, Columbia University Observatory, New York City.

14. Photographic Researches near the Pole of the Heavens. By Professor Harold Jacoby, Columbia University Observatory.

15. The Parallaxes of 61¹ and 62² Cygni from a Reduction of the Rutherford Measures. By Dr. H. S. Davis, Columbia Univ. Observatory.

16. The Praesepe Group: Measurement and Reduction of the Rutherford Photographs. By Dr. Frank Schlesinger, Columbia University.

17. The Western Boundary Survey of Maryland. By Dr. L. A. Bauer, University of Cincinnati, Cincinnati, Ohio.

18. Linear Algebras. By Professor James Byrnie Shaw, Illinois College, Jacksonville, Ill.

19. A Simple Test as to whether a Continuous Function possesses a Derivative; with Applications to the Examples, hitherto devised, of Continuous Functions having no Derivative. By Professor R. D. Bohannon, Ohio State University, Columbus Ohio.

20. The Relation of Direct and Reflected Observations with Meridian Instruments, and the Interpretation of Results. By Professor J. R. Eastman, U. S. Naval Observatory, Washington, D. C.

21. The Effect of Atmospheric Disturbance on Telescopic Definition. By Professor G. W. Hough, Dearborn Observatory, Evanston, Ill.

22. The Condition of the Surface of the Planet Jupiter. By Professor G. W. Hough, Dearborn Observatory.

23. The Observation of Occultation of Stars by the Moon. By Professor G. W. Hough, Dearborn Observatory.

24. A Class of Functions connected with Kepler's Problem. By Professor Edgar O. Lovett, Princeton University, Princeton, N. J.

25. On the Aims of the International Society for the Promotion of Quaternions and Allied Branches. By Dr. Alexander Macfarlane, Chatham, Ont.

The following reports on recent progress will be presented :

1. Report on the Recent Progress in the Dynamics of Solids and Fluids. By Dr. Ernest W. Brown, Christ's College, Cambridge, Professor of Applied Mathematics, Haverford College, Pa.

2. Report on Theory of Invariants : the Chief Contributions of a Decade. By Professor Henry S. White, Northwestern University, Evanston, Ill.

3. Report on the Recent Progress in the Mathematical Theory of Electricity and Magnetism. By Professor Arthur G. Webster, Clark University, Worcester, Mass.

4. Report on the Modern Group Theory. By Dr. G. A. Miller, Cornell University, Ithaca, N. Y.

5. Meteorology from a Mathematical and Physical Point of View. By Professor Cleveland Abbe, Weather Bureau, Washington, D. C.

SECTION B.—PHYSICS.

Address of the Vice-President : On the Perception of Light and Color. By Professor Frank P. Whitman, Adelbert College, Cleveland, Ohio.

1. The Measurement of Thermal Conduc-

tivity in Iron. By Professor E. H. Hall, Cambridge, Mass.

2. On Energy and Entropy.

3. Second Report on the Magnetic Survey of Maryland. By Professor L. A. Bauer, Cincinnati, Ohio.

4. On the Magnetic Deflection of Diffusely Reflected Cathode Rays. By Professor Ernest Merritt, Ithaca, N. Y.

5. On the Electrical Properties of the Vapor from the Arc. By Professor Ernest Merritt and O. M. Stewart, Ithaca, N. Y.

6. The Heat of Fusion of Ice Determined in Electrical Units. By Professor E. L. Nichols, Ithaca, N. Y.

7. The Hysteresis of Iron and Steel at Ordinary Temperatures and at the Temperature of Solid Carbon Dioxide. By A. H. Thiessen, Ithaca, N. Y.

8. The Electrical Resistance of Lead Amalgams at Low Temperatures. By G. W. Gressman, Ithaca, N. Y.

9. The Most Efficient Thickness of Transformer Plate. By F. Bedell, R. M. Klein and T. P. Thompson, Ithaca, N. Y.

10. The Resistance of Iron Wires for Alternating Currents of Ordinary Frequencies. By Professor Ernest Merritt, Ithaca, N. Y.

11. Photographic Studies of the Electric Arc. By N. H. Brown, Ithaca, N. Y.

12. Exhibition of Certain Models in Physics and Dynamics. By Professor Carl Barus, Providence, R. I.

13. Lightning Photographed on Moving Plates.

14. On the Use of the Electrodynamometer instead of the Telephone in Electrolytic Resistance Measurements. By Professor Arthur Kendrick, Terre Haute, Ind.

15. The Structure of Cyclones and Anticyclones.

16. Temperature and Vapor Gradients in the Atmosphere. By Professor F. H. Bigelow, Washington, D. C.

17. On the Velocity of Light in a Magnetic Field. By Edward W. Morley, Henry T. Eddy and Dayton C. Miller.

18. A Study of Standard Meter Scales ruled on Nickel, Silver and Glass. By Professor D. C. Miller, Cleveland, Ohio.

19. An Apparatus for Demonstrating, in Alternating Currents, the Change of Phase due to either Inductance or Capacity.

20. An Apparatus for Determining Coefficients of Induction. By Professor Sidney T. Moreland, Lexington, Va.

21. Study of Elastic Fatigue by the Time Variation of the Logarithmic Decrement. By Professor J. O. Thompson, Amherst, Mass.

22. A Redetermination of the Ampere. By Geo. W. Patterson and Karl E. Guthe, Ann Arbor, Mich.

23. Polarization and Internal Resistance of the Voltaic Cell. By Dr. Karl E. Guthe, Ann Arbor, Mich.

24. A New Gas. By Chas. F. Brush, Cleveland, Ohio.

25. Hysteresis Loss in Iron for very small Ranges of Induction (B). By Henry S. Webb, South Bethlehem, Pa.

26. Note on the Testing of Optical Glass. By Professor W. S. Franklin, South Bethlehem, Pa.

27. A Lecture-room Experiment in Electrostatics. By Professor W. S. Franklin.

28. A Study of Galvanic Polarization. By Barry McNutt, South Bethlehem, Pa.

29. On a Normal Curve of Magnetization of Iron. By S. S. Clark, South Bethlehem, Pa.

30. Some Determinations of Dielectric Strength. By Professor Thomas Gray, Terre Haute, Ind.

SECTION C.—CHEMISTRY.

Tuesday, August 23. (Under the auspices of the American Chemical Society), Morning—Analytical Chemistry, led by Dr. P. DeP. Ricketts, Columbia University. Afternoon—Teaching of Chemistry, Dr. F. P. Venable, University of North Carolina.

Thursday, August 25. Morning—Inorganic Chemistry, led by Dr. H. A. Wells, Yale University. Afternoon—Organic Chemistry, by Dr. Ira Remsen, Johns Hopkins University. Evening—Physical Chemistry, Dr. T. W. Richards, Harvard University.

Friday, August 26. Afternoon (in one of Harvard University rooms) — Physiological Chemistry, led by Dr. E. E. Smith, New York.

Saturday, August 27. Morning—Agricultu-

ral Chemistry led by Dr. H. A. Weber, Ohio University. Afternoon—Technical Chemistry, Dr. N. W. Lord, Ohio State University.

SECTION D.—MECHANICAL SCIENCE AND ENGINEERING.

Address of the Vice-President, Professor M. E. Cooley, University of Michigan, Ann Arbor, Mich.

1. High-Speed Influence Machines. By Charles F. Warner, Cambridge, Mass.

2. Proposed Methods of Determining the Frequency of Alternating Currents. By Carl Kinsley, Falls Church, Va.

3. Instruments and Methods of Hydrographic Measurements by the United States Geological Survey. By F. H. Newell, Washington, D. C.

4. The Development of the Topographic Work of the United States Geological Survey and its application to the Solution of Economic and Engineering Problems. By Chas. D. Walcott, Washington, D. C.

5. A new Form of Dynamometer Car. By Professor Lester P. Breckenridge, Urbana, Ill.

6. A Combined Absorption and Transmission Dynamometer. By Professor John J. Flather, Lafayette, Ind.

7. Some Experiments with a New Form of Impact Testing Machine. By Professor W. K. Hatt, Lafayette, Ind.

8. Superheating and the Use of Superheated Steam. By Geo. I. Rockwood, Worcester, Mass.

SECTION E.—GEOLOGY AND GEOGRAPHY.

Address of the Vice-President: Glacial Geology in America. By Professor H. L. Fairchild, University of Rochester, Rochester, N. Y.

1. Outline Map of the Geology of Southern New England. By Professor B. K. Emerson, Amherst, Mass.

2. Basins in Glacial Lake Deltas. By Professor H. L. Fairchild, Rochester, N. Y.

3. An Exhibition of the Rare Gems and Minerals of Mt. Mica. By Dr. A. C. Hamlin, Bangor, Maine.

4. The Hudson River Lobe of the Laurentide Ice-sheet. By Professor C. H. Hitchcock, Hanover, N. H.

5. The Age of the Amboy Clay Series as in-

licated by its Flora. By Professor Arthur Hollick, Columbia University, New York, N. Y.

6. The Origin of the Limonite Ores of Nit-tany Valley, Pennsylvania. By Professor T. C. Hopkins, State College, Pa.

7. The Region of the Causses in Southern France (with maps and stereopticon views). By Dr. Horace C. Hovey, Newburyport, Mass.

8. The Washington Limestone in Vermont. By Professor C. H. Richardson, Hanover, N. H.

9. Fluctuations of North American Glaciation shown by Interglacial Soils and Fossiliferous Deposits. By Warren Upham, St. Paul, Minn.

10. Time of Erosion of the Upper Mississippi, Minnesota and St. Croix Valleys. By Warren Upham.

11. Supposed 'Corduroy Road' of Late Glacial Age, at Amboy, Ohio. By Professor G. Frederick Wright, Oberlin, Ohio.

SECTION F.—ZOOLOGY.

Address of the Vice President: A Half-century of Evolution with Special Reference to the Effect of Geological Changes on Animal Life. By Professor A. S. Packard, Brown University, Providence, R. I.

1. Evolution and Migration of Hawaiian Land Shells. By Professor Alpheus Hyatt, Boston Society of Natural History, Boston, Mass.

2. A new Classification of Fossil Cephalopods. By Professor Alpheus Hyatt, Boston Society of Natural History.

3. Notes on the Habits of some Burrowing Bees. By Professor John B. Smith, Rutgers College, New Brunswick, N. J.

4. A New Method of Studying Underground Insects. By Professor John B. Smith, Rutgers College.

5. On the Systematic Position of the Trilobites. By Professor A. S. Packard, Brown University, Providence, R. I.

6. On the Carboniferous Fauna of Rhode Island. By Professor A. S. Packard, Brown University.

7. On the Markings of Nodontian Larvæ. By Professor A. S. Packard, Brown University.

8. Some Points in the Oögenesis of *Virbivus zostericola* Smith. By Frederic P. Gorham, Providence, R. I.

9. A Species of *Myxosporidium* found in

Fishes, in the Aquaria of the U. S. Fish Commission, at Woods Holl, Mass. By Frederic P. Gorham, Providence, R. I.

10. A New Species of Pigment producing Pathogenic Bacillus. By Frederic P. Gorham, Providence, R. I.

11. On the Types of Vertebrate Embryos. By Dr. Charles Sedgwick Minot, Harvard Medical School, Boston, Mass.

12. On the Embryology of the Rabbit. By Dr. Charles Sedgwick Minot, Harvard Medical School.

13. Variation *versus* Heredity. By Professor H. S. Williams, Yale University, New Haven, Conn.

14. The proposed Attempt to introduce *Blas-tophora psenes* into California. By Dr. L. O. Howard, U. S. Dept. of Agriculture, Washington, D. C.

15. The Records of 1898 of Broods VII and and XVII of *Cicada septendecim*. By C. L. Marlatt, U. S. Dept. of Agriculture, Washington, D. C.

16. On the Genitalia of Ants, and their Value in Classification. By W. H. Ashmead, U. S. Dept. of Agriculture, Washington, D. C.

17. Naples Station: General Description and Notes on Methods of Work employed there. By Dr. E. O. Hovey, American Museum of Natural History, New York, N. Y.

18. General Statement of Types and Figured Specimens of Fossil Invertebrates in the American Museum of Natural History. By Dr. E. O. Hovey, American Museum Natural History.

19. Measurements of two large Lobsters recently added to the Collections of the American Museum of Natural History. By Dr. E. O. Hovey, American Museum Natural History.

20. On the Present State of our Knowledge of the North American Tertiary Mollusk-fauna. By Dr. Wm. H. Dall, Smithsonian Institution, Washington, D. C.

21. Cranial Osteology in certain species of Dinichthys. By Dr. Charles Rochester Eastman, Museum of Comparative Zoology, Cambridge, Mass.

22. Moniloporidæ, a new Family of Palæozoic Corals. By Amadeus W. Grabau, Cambridge, Mass.

23. A Historical Notice of Ross' Rosy Gull,

Rhodostethia rosea. By John Murdoch, Public Library, Boston, Mass.

24. Vein Evolution in Insect Wings. By James G. Needham, Ithaca, N. Y.

25. Localized Stages in Growth. By Dr. Robert T. Jackson, Harvard University, Cambridge, Mass.

26. On the Piscine Ancestors of the Amphibians. By Professor Theo. Gill, Columbian University, Washington, D. C.

27. Variation in the Shell of *Helix nemoralis* in the Lexington, Va., Colony. By Professor Jas. Lewis Howe, Washington and Lee University, Lexington, Va.

SECTION G.—BOTANY.

Address of the Vice-President: The Conception of Species as affected by Recent Investigations on Fungi. By Professor W. G. Farlow, Harvard University, Cambridge, Mass.

1. Studies on North American Lichens. By Thomas A. Williams, Department of Agriculture, Washington, D. C.

2. The Micro-Chemistry of the Cornstalk. By Thomas A. Williams.

3. The Effect of an Atmosphere of Ether upon Seeds and Spores. By C. O. Townsend, Barnard College, New York City.

4. Half Shade and Vegetation. By Byron D. Halsted, New Jersey Agricultural Experimental Station, New Brunswick, N. J.

5. Influence of a Wet Spring on Parasitic Fungi. By Byron D. Halsted.

6. Starch Distribution as affected by Fungi. By Byron D. Halsted.

7. The Carposporic Type of Reproduction of Rhodophyceæ. By Bradley M. Davis, University of Chicago, Chicago, Ill.

8. Notes on the Relative Infrequency of Fungi upon the Trans-Missouri Plains and the Adjacent Foothills of the Rocky Mountains. By Charles E. Bessey, University of Nebraska, Lincoln, Neb.

9. The Comparative Anatomy of the Pistils of Apocarpous Families. By Ernest A. Bessey.

10. Origin and Homologies of Blepharoplasts. By Herbert J. Weber, Dep. Agric., Washington, D. C.

11. Notes on the Strand Flora of Florida (lantern slide lecture). By Henry J. Weber.

12. Some Misuses of the Herbarium. By E. L. Greene, Catholic University of America, Washington, D. C.

13. The Advantages offered by the Philadelphia Commercial Museum to Botanists. By Wm. P. Wilson, Director, Philadelphia, Pa.

14. Notes on Arctic Willows. By W. W. Rowlee, Cornell University, Ithaca, N. Y.

15. On the Hypocotyl of Woody Dicotyledonous Plants. By Francis Ramaly, University of Colorado, Boulder, Col.

16. The Quantitative Analysis of the Floral Covering. By Roscoe Pound and Frederic E. Clements, University of Nebraska.

17. Some Investigations bearing upon the Symbiotic Microplasm Theory of Grain Rust. By Henry L. Bolley, North Dakota Experimental Station, Fargo, N. Dakota.

18. The Work performed by the Agricultural College toward a Botanical Survey of Michigan. By W. J. Beal, Agricultural College, Ingham Co., Michigan.

19. Some Examples Illustrating Modes of Seed Dispersion. By W. J. Beal.

20. Notes on the Physiology of the Sporophyte of Certain Mosses. By Rodney H. True, Wingra Park, Madison, Wis.

21. The Toxic Action of a Certain Group of Compounds. By Rodney H. True.

22. Types of Vegetation on the Keys of South Florida. By Charles Louis Pollard, Washington, D. C.

23. On the Validity of the Genera *Senna* and *Chamaecrista*. By Charles Louis Pollard, National Museum, Washington, D. C.

24. Species Characters among the Violets. By Charles Louis Pollard.

25. Potato as a Culture Medium, with some Notes on a Synthesized Substitute. By Erwin F. Smith, Department of Agriculture, Washington, D. C.

26. Some Little-used Culture Media which have proved Valuable for Species Differentiation. By Erwin F. Smith.

27. Plant Growth in Terms of Climatology. By Milton Whitney and Lyman J. Briggs, Department of Agriculture, Washington, D. C.

28. Effect of Fertilizers on the Germination of Seeds. By Gilbert H. Hicks, Department of Agriculture, Washington, D. C.

29. Development of the Pollen Grain in *Symplocarpus* and *Peltandra*. By B. M. Duggar, Cornell University, Ithaca, N. Y.

30. Fermentation without Live Yeast Cells. By Katherine E. Golden, Lafayette, Ind., and Carleton G. Ferris.

31. Deterrent Action of Salt in Yeast Fermentation. By Katherine E. Golden.

32. Fungous Gardening as practiced by the Termites in West Africa and Java. By O. F. Cook, U. S. National Museum, and D. G. Fairchild, Department of Agriculture, Washington, D. C.

33. The Embryology of *Taxus*. By E. J. Durand, Cornell University, Ithaca, N. Y.

34. A Bacteriological Study of Pear Blight. By Lillian Snyder, Lafayette, Ind.

35. Life History and Characteristics of the Pear Blight Bacillus. By Merton B. Waite, U. S. Department of Agriculture.

36. Notes on Some Diseases of Southern Pines. By Hermann von Schrenk, Missouri Botanic Garden, St. Louis, Mo.

37. The Ecological Distribution of Colorado and Wyoming Plants. By L. H. Pammel, Ames, Ia.

38. Notes on Some Monocotyledonous Embryo-sacs. By K. M. Wiegand, Cornell University, Ithaca, N. Y.

39. General Characteristics of the Dune Flora of Southeastern Virginia. By Thos. H. Kearney, Jr., U. S. Department of Agriculture, Washington, D. C.

40. Vegetation of the Wooded Fresh-water Swamps of Southeastern Virginia. By Thos. H. Kearney, Jr.

SECTION H.—ANTHROPOLOGY.

Address of the Vice-President: The Advance of Psychology. By Professor J. McKeen Cattell, Columbia University, New York.

1. Typological Analysis. By Professor D. G. Brinton, University of Pennsylvania.

2. Anthropological Terminology. By Professor D. G. Brinton.

3. Sophiology, or the Science of the Evolution of Opinion. By Major J. W. Powell, Bureau of American Ethnology, Washington, D. C.

4. Papago Medicine. By Dr. W J McGee,

Bureau of American Ethnology, Washington, D. C.

5. Some Definitions in Anthropology. By Dr. W J McGee.

6. Anthropological Problems of the Pacific Slope. By Dr. W. H. Holmes, U. S. National Museum.

7. Museum Presentation of Anthropology. By Dr. W. H. Holmes.

8. The Significance of the Garment, a Study of the Omaha Tribe. (Lantern illustrations.) By Miss Alice C. Fletcher, Washington, D. C.

9. The Earth Lodge. By Miss Alice C. Fletcher and Dr. W. Matthews, Washington, D. C.

10. The Harmonic Structure of Indian Songs. By Professor J. C. Fillmore, Pomona College, Claremont, California.

11. Ritual of the Sacred Pole of the Omahas. (Phonograph records.) By Francis La Flesche, Washington, D. C.

12. The Survival of African Music in America. By Mrs. Jeanette Robinson Murphy, New York, N. Y.

13. Some of the Evidences that Northmen were in Massachusetts in pre-Columbian Times. By Miss Cornelia Horsford, Cambridge, Mass.

14, 15. Subjects relating to the Physical Anthropology of North American Indians. By Dr. G. A. Dorsey, Field Columbian Museum, Chicago, Ill.

16. The Smith Sound Eskimo. By A. L. Kroeber, Columbia University.

17. The Maori of New Zealand; his history and country. By Hon. Hugh H. Lusk, England.

18. 'Moros,' or Malay Pirates of the Southern Philippines. By Professor Dean C. Worcester, University of Michigan, Ann Arbor, Mich.

19. The Philippine Islands and their People. By Professor Dean C. Worcester.

20. The Tools of the American Pioneer. (Lantern illustrations.) By H. C. Mercer, University of Pennsylvania, Philadelphia, Pa.

21. The Origin of Domesticated Animals. By H. C. Mercer.

22. Burial Customs of the Ancient Zapotecs of Southern Mexico. By M. H. Saville, American Museum of Natural History, New York.

23. Notes on the Lacandon Indians of Mexico. By M. H. Saville.

24. Tomahawk and Shield. By Frank H.

Cushing, Bureau of American Ethnology, Washington, D. C.

25. Examples of Primitive Fire-working from Florida. By Frank H. Cushing.

26. Art in Prehistoric Times. By Professor Thomas Wilson, Smithsonian Institution, Washington, D. C.

27. Prehistoric Musical Instruments. By Professor Thomas Wilson.

28. Arrow-points, Spear-heads and Knives. By Professor Thomas Wilson.

29. Problems of the Rechahecrian Indians of Virginia. By William Wallace Tooker, Sag Harbor, N. Y.

30. The Swastica and other Marks among the Eastern Algonquians, a preliminary study. By William Wallace Tooker.

31. The Water Burial Time. By Stansbury Hagar, New York.

32. Relation of the Moon to Time-reckoning among the Early Races. By R. J. Floody, S. Ashburnham, Mass.

33. The Rite of Circumcision among the Early Races. By R. J. Floody.

34. Anthropology, not Sociology, as an Adequate Philosophy. By Daniel Folkmar, Milwaukee, Wis.

35. Science the Basis of Morals. By M. A. Clancey, Clerk's Office, Supreme Court, Washington, D. C.

36. Anthropological Differences between Typical White and Negro Girls of the same Age. By Dr. A. Hrdlicka, State Pathological Institute, New York.

37. Variations of the Normal Tibia. By Dr. A. Hrdlicka.

38. Résumé of Recent Studies on the Origins of European Races. By Dr. W. Z. Ripley, Massachusetts Institute of Technology, Boston, Mass.

39. Presentation of a Bibliography of the Anthropology and Ethnology of Europe. By Dr. W. Z. Ripley.

40. Typical American Students, illustrated by Charts and Statues. By Dr. D. A. Sargent, Hemenway Gymnasium, Harvard University, Cambridge, Mass.

41. A New Kymographion; a New Chronoscope. Professor G. W. Fitz, Harvard University, Cambridge Mass.

42. Anthropometric Instruments. By Pro-

fessor J. McKeen Cattell, Columbia University, New York.

43. Psychology and Art. By Professor Hugo Münsterberg, Harvard University, Cambridge, Mass.

44. The New Theory of the Light Sense. By Mrs. C. Ladd Franklin, Baltimore, Md.

45. Discussion: In Man, what Factors are due to Heredity and what to Environment? Opened by Professor D. G. Brinton, Dr. W. J. McGee and Dr. W. Z. Ripley.

SECTION I.—SOCIAL AND ECONOMIC SCIENCE.

Address of the Vice-President: The Historic Method in Economics. By Archibald Blue, Director, Bureau of Mines, Toronto, Ontario.

1. The College of Forestry at Cornell University. By B. E. Fernow, Cornell University, Ithaca, N. Y.

2. High Wages in Money or what Money will buy, the Consequent of Low Cost of Production. By Edward Atkinson, Boston, Mass.

3. Local Life by Local Times. By S. Edward Warren, Newton, Mass.

4. A Study of Competition and Suburban Prices. By S. Edward Warren.

5. Executive Discretion in the United States. By Cora A. Benneson, Cambridge, Mass.

6. The Short Duration of School Attendance, Causes and Remedies. By Mr. and Mrs. Daniel Folkmar, State Normal School, Milwaukee, Wis.

7. The Progress of the Maritime Commerce of the World during the past Fifty Years. By E. L. Corthell, New York, N. Y.

8. Cuba, Past, Present and Future. By Wolford Nelson.

9. Examination of the Theory of Rent. By Edward T. Peters, Washington, D. C.

10. The Price of Wool. By Henry Farquhar, Department of Agriculture, Washington, D. C.

11. The Transportation Problem. By John S. Willison.

12. The Formative Period of a Great City: A Study of Greater New York. By William H. Hale, Brooklyn, N. Y.

13. Deviations from the Normal in the Annual Rate of Agricultural Production. By John Hyde, U. S. Department of Agriculture.

14. Competition and Railway Rates. By H. T. Newcomb, Department of Agriculture.