

of his own may do so and submit the same to the Department for approval. In case the Department approves, the course may be followed by that teacher.

J. A. Randall, Pratt Institute, Brooklyn, made a brief report indicating the progress that is being made by the committee on "Practical Laboratory Experiments." Following this the meeting adjourned. The following officers were elected for the year 1913: President, Frederick A. Saunders, Syracuse University; Vice President, Bryan O. Burgin, High School, Albany; Sec.-Treas., Ernest F. Conway, Central High School, Syracuse.

BRYAN O. BURGIN.

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### MINUTES OF THE PHYSICS SECTION OF THE CENTRAL ASSOCIATION OF SCIENCE AND MATHEMATICS TEACHERS.

The Physics and Chemistry Sections of the Central Association of Science and Mathematics Teachers met in joint session in the Physics Lecture Room in Science Hall, Northwestern University, Evanston, Friday afternoon, Nov. 29, 1912. The meeting was called to order by Mr. E. E. Burns, chairman of the Physics Section. Mr. Burns announced that the two programs of the Physics Section which had been prepared for Friday afternoon and Saturday forenoon would be given that afternoon in order that the members of the section might attend a meeting of the American Physical Society which would meet in the same room Saturday forenoon. Chairman Burns appointed the following nominating committee for the Physics Section: Chas. M. Turton, Bowen High School, Chicago, chairman; Chas. H. Perrine, Wendell Phillips High School, Chicago; H. L. Terry, State High School Inspector, Madison, Wis.

Mr. Burns then called on Mr. J. W. Shepherd, chairman of the Chemistry Section, to introduce Dr. Herbert N. McCoy, the speaker before the joint session. "Recent Advances in Radio-activity" was the subject of Dr. McCoy's paper. Dr. McCoy presented the series of radio-active elements and discussed the period of activity, the range, and the emanations of each. He explained how each of these phenomena was determined and measured. His paper dealt especially with the contributions that recent study of radio-active elements has thrown on the constitution of matter, the relation of the chemical elements, and the age of the elements. It is hoped that the paper read by Dr. McCoy will be published in the proceedings of the Association.

The members of the Chemistry Section then retired to the Chemistry Lecture Room of Science Hall for the remainder of their program.

Prof. A. P. Carman, University of Illinois, gave the second paper before the Physics Section upon "Some Recent Physical Theory and Its Bearing on the Teaching of the Elements of Physics." Prof. Carman discussed the beginning and the development of the electron theory and its replacement of the ether theory. He showed how the electron theory has come to explain the phenomena of magnetism, electricity, light, and even heat, and he drew the conclusion that what has for so long a time been called "ether" is not necessary for the explanation of the various phenomena.

This paper brought forth a lively discussion and some very pointed questions were asked Prof. Carman by C. F. Adams, Dr. Mann, Chas. M. Turton, and others. Some of the questions asked were: "Do we not measure what we call the 'wave length' of light?" "How can this be if there is no ether?" "Is the corpuscular theory a real explanation of a

real phenomena?" "Shall we dodge the explanation of phenomena to high school students?" Prof. Carman's paper was published in the January issue of *SCHOOL SCIENCE AND MATHEMATICS*, and should be widely read and discussed.

The next number on the program was the presentation and illustration of an electrical apparatus by Mr. C. F. Adams, Central High School, Detroit. Mr. Adams remarked that he did not believe in "cure alls," nor in a single apparatus that could illustrate all things, yet when he had shown what he could do with his new apparatus the members of the section felt that he had combined many principles into this one piece of apparatus. Mr. Adams originally made his apparatus to illustrate Ampere's rules of electric currents, but perfected it to illustrate in addition the principles of the D'Arsonval galvanometer, the magneto, the dynamo, and the motor, both for A. C. and for D. C. currents. Many favorable comments were made concerning this apparatus. This paper is published in the March issue of *SCHOOL SCIENCE AND MATHEMATICS*.

Mr. W. E. Tower next gave a report of the committee on "Segregation in Physics Classes." Mr. Tower gave the substance of the replies to questions which he sent out to teachers who are trying the plan of segregating physics classes. The conclusion reached from the replies received was that best results are obtained when the classes in physics are segregated. He concluded his report by recommending that efficiency tests be given these and other classes to determine the real value of segregation.

Mr. F. E. Goodell, North Des Moines High School, Des Moines, Iowa, gave a report of the committee appointed a year ago upon "Efficiency Tests." Mr. Goodell's report was based on replies which he received from a questionnaire sent to some sixty teachers of physics. He gave verbatim the replies of several teachers in answer to his first question, viz., "Is a knowledge of physics the aim in our teaching of the subject?" Mr. Goodell drew the conclusion from the replies received that the teachers of physics are not trying new methods for testing for efficiency, but seem rather to be content with the old ways of teaching.

At the conclusion of the report the motion was made and carried that the same committee be continued for another year and that it investigate further and report at the next annual meeting. As a result of this motion Mr. Goodell requested that all present who would co-operate with his committee this coming year give him their name and address. A great many responded to the request.

A lively discussion, based particularly upon the replies that Mr. Fred R. Nichols, Crane High School, Chicago, received from his eighty pupils in physics in answer to the question, "What have you learned from the study of physics?", followed Mr. Goodell's report.

Chairman Burns adjourned the section to meet in executive session at 9:30 a. m., Saturday, in the Physics Room in Fisk Hall.

The Physics Section met in executive session in the Auditorium of Fisk Hall at 10:15 Saturday forenoon. The Nominating Committee reported the following nominations:

Chairman—C. F. Adams, Central High School, Detroit.

Vice-Chairman—H. R. Smith, Deerfield Township High School, Highland Park, Ill.

Secretary—A. A. Upham, State Normal School, Whitewater, Wis.

A motion was made and seconded that the report of the Nominating Committee be accepted, and that the persons named be the officers for the ensuing year. The motion was carried. The meeting then adjourned.

E. P. REYNOLDS, *Secretary*.