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AMUSEMENTS.

CONSERVATORIUM CONCERT.

The first chamber music concert of the present season by the staff of the Conservatorium was given at the Elder Hall on Monday evening. His Excellency the Governor and Lady Le Hunte were present, and there was a large and appreciative audience. The programme submitted was of the usual high-class character, and each number was presented in masterly style. Concert-lovers have learned to expect that scholarly writings will be treated with broad sympathy and artistic conception at these performances, and those present certainly were not disappointed. The splendid "Sonata for piano and violoncello" (Beethoven), op. 5, No. 2, with which the concert opened, was one of the treats of the evening. Herr I. G. Reimann took the pianoforte part, and Herr H. Kugelberg the violoncello, and the interpretation of each of the charming movements was admirable. The work abounds in passages of exceeding beauty, and the complete design is worked out with the commanding skill in the use of tone combinations which characterises all Beethoven's compositions. The performers grasped the master's meaning in all its detail, and the result was a rendering full of sympathetic expression and glowing with poetic charm. Miss Martha Bruggemann, who was in excellent voice, supplied the vocal numbers. Her singing, which is always refined and artistic, was much appreciated, especially in the graceful recitative and air, "Hops of bliss untold" and "Whither away my heart?" from Cowen's "Sleeping Beauty," which she invested with an altogether appropriate pensiveness. A bracket of three short songs by Franz, "Through the woods one night by moonlight," "Farewell," and "The butterfly has fallen in love with the rose," made a pleasing number, and the talented soprano did justice to each, as well as to her own splendid vocal powers. A very charming rendering of the first, fourth, and fifth movements of "Trio for piano and strings" (Gade), was given by Herr Reimann (piano), Herr H. Heinicke (violin), and Herr Kugelberg (cello). The melodious cadence of the larghetto movement was particularly impressive. The monumental work, "Quintet for piano and strings," op. 34 (Brahms), was presented for the first time in Adelaide, and those who listened to it will welcome a repetition if the same high order of skill in its rendering can be assured. In addition to the instrumentalists mentioned in the previous writing, Miss E. Cowell (violin) and Miss E. Delprat (viola) took part. The writing is characteristic of Brahms' most finished method. Clearness of ideas, scholarly development of motive, and an unerring instinct in dealing with harmonies were noticeable. The interpretation was brilliant, every part being well illustrated, and the ensemble altogether satisfactory. Mr. A. Williamson acted as accompanist to the vocal numbers, and the concert throughout sustained the high reputation of the Conservatorium.

shown by Merskwald to resemble closely those which chemists would anticipate such substances to have. It was, in fact, the big brother of the sulphur-selenium-tellurium group. The final descendant would have the atomic weight less still. This broke up very like lead, and the constant recurrence of lead in the radium area made probable the hypothesis that lead itself was the final product of radium. Radium had a life of only a few thousand years, and therefore they must assume that it was continually produced, unless they were to suppose that it was suddenly introduced into the earth a few thousand years ago. It had long been supposed that uranium was the original source from which radium was derived, and further evidence strongly confirmed this view. In all ores in which radium was found there was a proportion of uranium such as bore out this hypothesis. The exact proportion was 0.72 gram of radium to 1 ton of uranium, and this proportion was so universally found that a search for radium practically resolved itself into a search for uranium. The lecturer explained that recent discoveries at Olary and Wallaroo sustained this proportion. With regard to the Olary discovery, he understood that a search was being prosecuted for a body of ore richer in uranium than had hitherto been found, and on the success of this search the value of the discovery, from a commercial point of view, depended. At Wallaroo considerable success had already been reached in the process of purifying the mineral, and he had received from the authorities material which was 200 times as active as uranium. He understood this discovery would form the subject of a communication to be presented at an early date to the Royal Society by Mr. Radeliffe, the original discoverer. The Professor threw upon the screen a diagram which showed the complete history of the radio-active processes, and he drew attention to the marvellous results of a few years' work in this direction. Not very long ago the idea of one substance turning into another would have been scouted, and yet it was now possible to know with accuracy the details of a series of transformations, carried right through from the original substance (uranium) to the final substance of the radium series. That this was lead could hardly, perhaps, be distinctly said at present, but it was probable that in a very little while the matter would be decided. Polonium was found in excessively minute quantities, but a few milligrams could be collected, and this quantity would, if the lead theory were correct, turn into lead in the course of a year or two. The lecturer went on to describe certain curious experiments carried out by himself and Mr. Kleeman, which showed that when the alpha particle broke away an electron from the atom, under many circumstances this electron was extremely likely to slip back into its old place. The laws of it were not yet fully investigated, but a good deal had been done at the University of Adelaide, and more at the Cavendish Laboratory, Cambridge, by Mr. Kleeman, who recently went to Cambridge as the Adelaide research scholar. Mr. Norman Campbell had recently made many attempts at Cambridge to discover radio-activity in other substances than those specially known as radio-active. The experiments were very difficult, and yet they appeared to have been successful, and Mr. Campbell had announced that he had actually measured the range of the alpha particle emitted by lead, silver, tin, and other metals. The range of the alpha particle was shown to be 3.5 centimetres by the original researches carried out at Adelaide, and Mr. Campbell had now shown that the range of the lead particle was about 12 centimetres, and the range of other metals varied from four to five centimetres. Mr. Campbell's work further implied that the rate of change of ordinary materials was perhaps a million times as slow as that of uranium. The discovery that other substances than radium emitted an alpha particle of about the same size as radium strongly confirmed the idea that the particle itself entered as a principal constituent into all atoms. The discovery also tended to show that all atoms were in a continual state of flux. Thus we were gradually drifting away from our ideas of what was permanent in nature. In the last century it was supposed that at least the chemical atom was the final form of stability. Now it was seen that the very atoms themselves were in a state of change, and the recognition of the vast spaces of time occupied in these processes, and the recognition of the enormous stores of energy locked up in the atoms themselves, made it clear that the new science of radio-activity would not only be of immense importance in scientific discovery, but would have a momentous influence on the trend of human thought.

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RADIO-ACTIVITY.

PROFESSOR BRAGG'S SECOND LECTURE.

At the University last night Professor Bragg gave his second lecture on "Radio-activity" before a large audience. He explained, in opening, that he proposed to speak of the method by which the life of the radio-active substance was measured. The first important step in this process was the measurement of the number of alpha particles emitted by a given quantity of radium. Professor Rutherford had found that from one gram of radium there would be sent out 60,000,000,000 alpha particles in each second. The number of atoms in one gram of radium was expressed by a figure beginning with a 3 and followed by 21 cyphers. A simple division sum then showed that supposing the ejection of an alpha particle meant the breaking up of one atom of radium one two-thousandth part of a gram of radium would disappear by the end of the year. It was easy to see, therefore, that the life of radium was between 1,000 and 2,000 years. And since uranium had been found to break up at approximately 1-1,000,000th of the rate of radium, the life of uranium was to be measured by millions of years. Radium had been shown to be the parent of a long series of radio-active substances. The weight of the radium atom itself was about 226 times that of the hydrogen atom, and at each expulsion of an alpha particle this number was diminished by four, since the weight of the particle was equal to four times that of the hydrogen atom. It was very interesting to compare the weights which the various descendants of radium must possess with those of the substances in the chemist's table of atomic weights. It was well known that a periodic law existed amongst the atoms in that if they were arranged in a descending scale of magnitude various properties recurred at regular intervals. To this list the investigation of the properties of the radio-active descendants of radium had added one extremely interesting and new example. After the expulsion of the four alpha particles, the radium atom became a substance whose properties had been chiefly investigated by Madame Curie. This substance had been named polonium, after Madame Curie's country, Poland. The atomic weight of polonium should be about 209, but at this point in the chemist's table there was a gap, no substance having yet been found to fill it. Polonium, however, not only had the proper weight which it should have if it took the vacant place, but it had also properties such had been

THE UNIVERSITY OF ADELAIDE.

Public Examination in Theory of Music, June, 1906.—Primary division.—Pass list:—

- *Lottie Jean Akhurst (Mrs. Samson), *Ethel D. Ansell (Methodist Ladies' College, Miss Sprod), *Winifred Charlotte Baddams (Miss E. Carr), *Stella Maudie Ballou (Dryburgh House School, Miss H. Thompson), *Doris Bainger (Methodist Ladies' College, Miss Sprod), *Florence Barnes (Convent of Mercy, Angas-street), *Genevieve Margaret Barratt (Convent of Mercy, Angas-street), *Marjorie Gladys Bayer (Miss H. M. Waddington), *Rosalie Bertelmeier (Miss E. M. Hooper), *Clara Bettles (Miss L. R. Stock), *Emma Blume (Mrs. E. Samson), *Marie Isabel Both (Miss A. L. Hawkins), *Johanna Bridget Bowler (Miss D. Ryan), *Bertha Brady (St. Joseph's Convent, Sevenhill), *Mary Cecilia Brobeny (St. Dominic's Priory, North Adelaide), *Clara Violet Broadbent (Elder Conservatorium), *Mary Penan Buchanan (Miss Dastiborough), *Mary Sylvia Vivien Budge (Miss D. Ryan), *Annie Catherine Cameron (Convent of Mercy, Angas-street), *Kathleen Carson (St. Joseph's Convent, Mitcham), *May Lovey Cavanagh (Mr. G. Short), *Louise May Chapman (Miss E. R. Rodings), *Minnie Kathleen Campbell Church (Miss Sheppard), *Ethel May Clutterbuck (Miss L. H. Puzey), *Ursula Godd (Convent of Mercy, Parkside), *Winifred Mary Cook (Miss Winwood), *Richard William Thomas Correll (Elder Conservatorium), *Ethel Crutenden (Sisters of St. Joseph, Norwood), *Joanna Fraser Cairns (Miss Sprod), *Leonore Darwent (Convent of Mercy, Angas-street), *Maud Davies (St. Joseph's Convent, Hindmarsh), *Anna Beryl de Garis (Methodist Ladies' College, Miss Sprod), *Hilda Mary de Garis (Methodist Ladies' College, Miss Sprod), *Ethel Rose Dinham (Miss M. J. Baker), *Mary Dolan (Convent of Mercy, Angas-street), *Nora Gray Donnell (Miss H. K. Wreford), *Frieda Margaretha Emer (Osmond House School, Miss H. C. Webb), *Vera Madge Ellis (Miss Wilson), *Gwendillon Brook Ewan (Miss Dastiborough), *Hilda Madeline Fisher (Miss C. J. Bonnin), *Eileen Ford (St. Dominic's Priory, North Adelaide), *Gertrude Francis (Convent of Mercy, Angas-street), *Eileen Gardner (Convent of Mercy, Angas-street), *Marie Geliert (Methodist Ladies' College, Miss Sprod), *Florence Alice Genders (Miss H. K. Wreford), *Nellie Gibb (Miss Carey), *Eileen Gibbs (Sisters of St. Joseph, Norwood), *Louisa Gibbs (Sisters of St. Joseph, Norwood), *Florence Gillen (Convent of Mercy, Angas-street), *Arline Gordon (Sisters of St. Joseph, Norwood), *Amy Grant (Miss H. C. Webb), *Ivy Grant (Miss H. C. Webb), *Martha Elizabeth Hakendorf (St. Joseph's Convent, Port Adelaide), *Ethel Daphne Harper (Hyde Park School of Music, Miss Winwood), *Mary Haver, (St. Joseph's Convent, Hindmarsh), *Kathleen Mary Hegarty (Convent of Mercy, Angas-street), *Mary Nina Frances Herbert (Dryburgh House School, Miss H. Thompson), *Glen Hewitt (Convent of Mercy, Angas-street), *Eileen Hogan (Convent of Mercy, Angas-street), *Louise Marjorie Hopkins (St. Peter's College High School, Miss Bosch), *Margaret Horrihan (Convent of Mercy, Angas-street), *Constance Adela Hubble (Miss H. C. Webb), *Ema Ross Hurley (Miss E. W. Haining), *Amy Edicote Hutchings (Miss Sheppard), *Mary Estelle Johnson (Mrs. Samson), *Eileen Bona Judell (Miss L. I. Fullarton), *Bertha May Kane (Hyde Park School of Music, Miss Winwood), *Clarice Larline Kesh (Miss Fletcher's School, Mrs. J. Moseent), *May Knapman (Dryburgh House School, Miss H. Thompson), *Jane Grace Lang (Miss A. Kearney), *Grace Chubball Lambert (Miss Grayner), *Eva Irene Lines (Miss E. Richards), *Emily Catherine Livingston (Miss Tucker), *Ida Lucas (Miss Fletcher's School, Mrs. J. Moseent), *Mary Margaret Veronica Lyddy (St. Joseph's Convent, Port Adelaide), *Floza Jean Macdonald (Mrs. Alderman), *Mary McDonnell (St. Dominic's Priory, North Adelaide), *Eileen McGann (Sisters of St. Joseph, Norwood), *Kathleen Mary McMahon (Convent of Mercy, Angas-street), *Louise May Mansfield (Miss E. A. Blackman), *Ethel Beresford Manning (Miss E. Ingley), *Edith Jane Maslin (Miss D. Ryan), *Mary Mabel Maslin (Miss D. Ryan), *Serena Clarice Ivarine Mildren (Miss R. M. Hooper), *Beatrice May Moore (Miss N. B. McEgan), *Mary Elvy Murdoch (Miss D. Ryan), *Gladys Bradbrook Newlyn (Miss E. Richards), *Kathleen Victoria Newlyn (Miss E. Richards), *Bridget Neylan (Convent of Mercy, Parkside), *Nora Veronica O'Brien (Convent of Mercy, Angas-street), *Margaret Nathalie Oldham (Miss Painter), *Gertrude O'Regan (Miss H. M. Whittington), *Irene O'Sullivan (St. Joseph's School, Kensington), *Edith Owens (Dominican Convent, Semaphore), *Lenora Runnalls Palamountain (Mrs. Samson), *Nelbe Pender (Mrs. P. Stapleton), *Ethel May Pollard (Hyde Park School of Music, Miss Winwood), *Nancie Wynne Pollock (Miss E. M. Williams), *Hilda Aemath Prior (Miss M. A. Mundy), *Ethel Raven (Sisters of St. Joseph, Norwood), *Lily Gertrude Riggs (Miss F. Barnett), *Ella Adelaide Ryan (Miss F. E. Francis), *Kathleen Mary Ryan (Convent of Mercy, Parkside), *Lily Scott (St. Joseph's Convent, Hindmarsh), *Una May Scott (Miss R. M. Hooper), *Louise May Scott (Mrs. Samson), *Vera Jane Shephard (Miss H. K. Wreford), *Jessie Muriel Shepherdson (Hyde Park School of Music, Miss Winwood), *Agnes Shevlin (Convent of Mercy, Angas-street), *Gladys Irene Smith (Miss E. L. Tite), *Ivy Smith (Miss A. G. Webb), *Mary Sullivan (Sisters of St. Joseph, Norwood), *Ruth Wheatley Taylor (Miss M. J. Baker), *Lesley Grant Varley (Akana School, Mount Lofty, Miss C. J. Bonnin), *Eileen Margaret Valentine (Miss E. Phillips), *Mary Catherine Vowles (St. Dominic's Priory, North Adelaide).

*Eva Marianne Waddell (Miss Dastiborough), *Charles Spurgeon Walter (Miss A. L. Hawkins), *Dorothy Warner (Miss E. O. Will), *Daisy Milne Weller (Miss Kingsborough), *Mary White (St. Dominic's Priory, North Adelaide), *Blanche Dalwood Wilkinson (Mr. Gordon Short), *Jean Constance Wilkinson (private tuition), *Nora Gertrude Williams (Convent of Mercy, Angas-street), *Ella Scott Young (Miss Shephard), *Margaret Ruth Zelling (Miss E. Rudemann). *An asterisk denotes that the candidate passed with credit.