advertiser

THE SCIENCE CONGRESS.

(Continued from previous page.)

ence in this hard but ideal system were. He recommended, however, with great confidence the project method to all teachers of history in Australia, for it was easy to organize and was most effective in its results. He gave interesting examples of projects carried out in Plymouth, England, New York, and Melbourne. Any teacher who was keen about the subject could arrange for work similar to this, and could obtain correspondingly good results. If the teacher was to do less of the work and allow his class to develop habits of self-expression and investigation it was essential that there should be a good reference library at each school. They willingly spent £500 on a school physics laboratory. Was it an unreasonable demand to ask for £50 for a history laboratory? The reference library in the school was steadily coming into its own all over the world, and in 20 years' time a school that had not a good library, with its scholars trained in its use, would be hopelessly out of date.

GEOLOGY SECTION.

THE DEVONIAN AGE.

"The Devonian Age of the Tanjilian Fauna and Flora of Victoria" was the subject of a paper read by Mr. Frederick Chapman, A.L.S., to the geological section. The name given by the author at a former meeting of the Australasian Association in 1912, of "Tanjilian," to an extensive series of Palaeozoic rocks in Gippsland, was here postulated as representing the Lower Devonian rather than the Upper Silurian. These rocks were characterized by large cockle-like shells (Panenka), minute sea-butterflies (Styliola), and a remarkably interesting series of plant remains allied to the Devonian flora of Rhynie, in Aberdeenshire. The definition of this series would necessitate a revision of the geological map over quite a large area in Gippsland, formerly referred to the Silurian. The examination of the flora of this interesting deposit was commenced by Miss A. Vincent, B.Sc., and was now being carried on by another research student, Miss E. C. Cookson, B.Sc., in conjunction with detailed work on the fauna by the author.

"The Devonian and older rocks of the Tabberabbera district, Gippsland, Victoria," was dealt with by Professor Ernest W. Skeats, D.Sc., A.R.C.S., F.G.S., University of Melbourne, in a paper. Recent field work by the author resulted in the finding of Ordovician graptolites in additional localities to those previously known, and to the finding of a black chert crowded with radiolaria, probably of Upper Silurian age. The chief result was the recognition that most, if not all, of the highly folded and crumpled rocks, known as the Tabberabbera series, formerly mapped as Middle Devonian, must now be referred to the Yeringian series of the Upper Silurian. This conclusion followed from the determination of the fossils by Mr. Chapman, of the Melbourne National Museum.

MAORI DECORATIVE ART.

TRACING ITS ORIGIN.

Mr. H. D. Skinner, B.A., of New Zealand, in his presidential address to the ethnology and anthropology section on the origin and relationships of the material culture and decorative art of the Maoris of New Zealand, remarked that the origin of Maori art had in the past proved one of the puzzles of New Zealand ethnology. Both their language and traditions indicated clearly that the Maoris came to New Zealand from the central or east central Pacific. They should therefore expect to find in that area closely related forms in material culture and decorative art with that of the Maoris. In material culture that actually seemed to be the case, but it was not so in decorative art. In tracing the origin of decorative design they found hardly anything to help them in Polynesia, but had to turn back two or three thousand miles to the Massim area, off New Guinea, the Sepik River, the Bismarck Archipelago, and the Admiralties. From there both material culture and art went back together into the Malay Archipelago, where they divided again, decorative art going back to India, whence some aspects of it could be traced back through North Persia and the Eastern Mediterranean to Egypt. The body of Polynesian material culture seemed to have its parent stem in South-East Asia in the region of Cambodia.

WATER CONSERVATION.

THE TORRENS AND THE MURRAY SCHEMES.

Interesting lantern lectures were delivered to members of the Institution of Engineers (Australia) on Wednesday afternoon in the Institute Lecture Theatre, North-terrace, by the Resident Engineer of No. 3 Lock, River Murray (Mr. R. J. Dumas) and the City Engineer (Mr. E. M. Scott). Mr. Scott took as his subject the problem of the Torrens floods, and Mr. Dumas dealt with the construction of Lock No. 3, River Murray. Professor Whitfield presided.

Describing the construction of No. 3 [illegible]

[illegible]

Mr. Scott began by describing the basin of the River Torrens and the various [illegible]

[illegible]

tion of the Torrens and Sixth Creek, where, though the water of the former is turbid and muddy, that of Sixth Creek is hardly discolored in time of flood, the creek having a watershed covered in scrub and timber. Too little attention had been paid to the alleviation which forestry might afford the water problem and the allied interests, water conservation and forestry, needed careful consideration, as they might supply a key to the solution.

CHEMISTS VISIT BURFORD'S.

About 50 delegates of the chemistry section accepted the invitation of Messrs. W. H. Burford & Sons to visit their soap and candle factory at Dry Creek on Wednesday afternoon. They were conducted over the works in parties, under the guidance of Messrs. F. A. Bowen (managing director), J. W. Stallery (factory manager), D. Fraser (office manager), and A. Minor (chemist), who explained to them the processes in the manufacture of the firm's products. Everywhere the visitors were impressed with the modern buildings and plant and the conditions under which the employes worked. The fitting shop was the first visited, and subsequently the visitors inspected the boiler house and furnaces. The crushing shop, where the ingredients are first intermingled, aroused considerable interest. On the upper floor were seen huge cauldrons, in which the soap is boiled in order to rid it of impurities. After boiling the soap runs by gravitation into a mixer, where it is thoroughly stirred. When ready it is allowed to run into moulds, each of which contains from 10 to 12 cwt. of soap. When it has solidified the block is placed on the slabbing machine, which cuts it into blocks about three feet long, a foot wide, and 2 inches thick. In the next stage it is run through a blocking machine, which trims the slab and cuts it into bars of the requisite size, on each of which it imprints a brand, and then pushes it aside to an ingenious mobile rack on which it is taken to the packers. In the case of the smaller blocks the soap proceeds on a conveyer belt through a branding machine, and into an intricate contrivance where it is wrapped. The toilet soap goes through a more involved process. After being boiled the product passes through a shredder and a dryer, from which it emerges in the form of white shavings. This is the basis from which soap of any color or perfume can be manufactured. The material is then transferred to a mixing machine, where it is finely ground and the color and perfume are added. When this operation is completed the soap passes on to a mill, where it is compressed and from which it emerges in long bars of the required shape. After being cut into tablets it is branded and wrapped, and finally packed. Conveyer belts from every department carry the packages to the warehouse. In the perfumery department the recipes for various lines of soap are compounded. Candles in various stages of manufacture were seen in the candle department, and the visitors were shown products of the factory ranging from three inches to over three feet in length. A visit to the glycerine department completed the tour of inspection. The visitors were also shown the nucleus of the model village which the company intends establishing at Dry Creek.

After the inspection of the works the visitors assembled in the dining-room at the works, where they partook of afternoon tea. Mr. Bowen welcomed the guests and in responding on their behalf Professor Fawsitt (Sydney) thanked the company for the hospitality that had been shown them.

RIVER PROBLEMS.

AND THE UPPER MURRAY.

"Problems of the Australian Rivers, with particular reference to the Upper Murray," was the subject of a paper read by Mr. G. L. Wood, M.A., F.R.G.S., in which the writer pointed out that the importance of the Upper Murray terrain depended upon the deltaic character of the Australian rivers after they left the hill country. Therefore all problems of drainage, more especially that of irrigation, must be attacked in the region where the streams followed well-defined valley bottoms. The Upper Murray catchment, with its hundreds of wooded ranges, right back to the Kosciusko wall, was economically a most important area. Farther down the valley deforestation and dilapidation had followed in the wake of settlement. The chief effect on the streams had been to derange the natural regulation of the river volumes. Great changes in the catchments were taking place almost unnoticed. The reckless waste due to a stupid lack of control over the catchments beggared description; and in a matter which affected the economic life of three States more must be done to protect the natural regulators.

The chief mischief resulted from the farcical and criminal lack of control over leaseholds. Timbergetters did some damage, but in this matter far more was done by the employes of the big freeholders and pastoral license holders. Their wanton depredations must be sternly and immediately checked. In particular the frequent and "accidental" fires that so strangely provided grass for the next season must be stopped. These wooded hills were losing their protective covering and becoming bare rock ridges. The coarser scrub gave place to grass, and the ground became "packed" hard by cattle traffic. The result was the forest floor, the natural reservoir and the regulator of the run-off, was gradually disappearing. The rainfall in this area was comparatively heavy, and the soil from the hillsides was being swept off into the valleys and deposited as barren sand and gravel flats. Thousands of acres of good agricultural land had already been lost through this cause alone.

The seasonal flow of the rivers was likewise disturbed by the acceleration in the speed of the run-off. The rivers ran "bankers" and speedily sank to a low level. Indeed, in the last dry period some of the rivers actually ceased to flow for the first time in the memory of settlers. Flood water problems were causing road engineers and shire councils great anxiety, and the annual bill of the railways for washouts, &c., was mounting very rapidly.

The derangement of the natural regulators would become increasingly important as irrigation works were extended. [illegible]

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OATS AND SHEEP.

PROVISION OF FODDER.

Mr. J. T. Pridham, plant breeder of the New South Wales Agricultural Department, read a paper before the Agricultural [illegible]

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tons of oats and an early variety of field peas. Growers were advised to pay attention to the selection of seed as well as obtaining a good line of ewes and well-bred rams.

The rotation practised would be:—(1) Year wheat, (2) fallow, (3) oats, (4) fallow. All crop was thus grown on fallowed land. The experience of the New South Wales departmental feeding trials was that Sunrise oats was about the best fodder for the purpose on the average, yielding better than wheat or barley and standing grazing well. Australia produced more wheat than oats. But in Canada the reverse was true. Although Canada grew as much oats her export of wheat was far greater. The bulk of her oats went to feed live stock in the winter. To get the best results from a holding of a limited area they must either hand-feed or graze cultivation paddocks, or do both. The time had come when it did not pay to rely on natural pasture alone. There was no good reason why wool as well as fat lambs should not be raised on a farm, and with the improved oats they now had a larger number carried than was possible under the old methods of "wheat and sheep," and with better financial returns.

PARASITES IN ANIMALS.

Mr. I. Clunies Ross presented a paper to the Veterinary Science Section dealing with the recent advances in the treatment of intestinal parasites, with particular reference to those of the horse and dog. Original observations conducted on animals in New South Wales for the most part confirmed the findings of workers in America. It was shown that the older methods of treatment were practically valueless. Figures were given as to the effective dose and the safety factor of the drugs mentioned. The results of the investigation showed that they now had most efficient and safe drugs for the eradication of parasites from live stock.

Mr. Ross also read a paper dealing with the examination of horses and dogs in New South Wales for the presence of parasites. A long list of the endo and ecto parasites found was given. Many of the species mentioned had not previously been recorded as occurring in Australia.

A DISEASE OF FOALS.

In the Veterinary Science Section Dr. L. B. Bull read a paper dealing with a disease of foals characterized by the presence of abscesses in the lungs and other parts of the body. The disease had, hitherto, not been described as occurring in Australia. The disease was distinct from navel-ill and was due to a specific bacillus. The course was relatively slow, but a fatal termination had resulted in all cases seen up to the present. Ordinary treatment was of no avail. Preventive measures in the form of vaccines were worthy of a trial. Breeders should seek the advice of investigators, so that more information might be obtained and the disease brought under control.

LORENZ METHOD FOR PHOSPHATES.

In the Agriculture Section a paper on the "Lorenz Method for Phosphates" was contributed by Messrs. A. T. Jefferis, B.Sc., A.I.C., and C. S. Piper, B.Sc. The paper stated that in consideration of the extensive use of phosphates throughout Australia, where 200,000 tons were imported annually, and where practically all cereals were drilled in with super, while the manuring of pasture was becoming common, it was of the utmost importance that a standard method of determining phosphoric acid should be made official throughout the Commonwealth. Speed consistent with accuracy was required. The various methods in use were discussed, and it was demonstrated by numerous comparative tests, conducted both in Queensland and in the Roseworthy laboratory, that the Lorenz-Neubauer method was the best in point of view of simplicity, speed, and accuracy.

A note in support of this view was read from Mr. Brunnich, Agricultural Chemist for Queensland, where it has been made official. The paper advocated the adoption of the Lorenz method throughout Australia.

TO-DAY'S PROGRAMME.

Section A.—Astronomy, Mathematics, and Physics.

10 a.m.—Joint session with Section J—In education section-room. Discussion on "The Teaching of Mathematics in the secondary schools in Australia." Papers on—(1) "The Teaching of Physics"; (2), "The Teaching of Science."

Section B.—Chemistry.

Morning.—Methods of Analysis and Improvements in Laboratory Practice. 10—"The Application of Physical Methods to the Analysis of Liquid Mixtures," Professor C. E. Fawsitt. 10.20—"The Barium Hydroxide Vacuum Method for the Determination of Carbon Dioxide," Mr. G. Ampt. 10.45—"A Simple Apparatus for the Continuous Extraction of Solids at the Boiling Temperature of the Solvent," Professor T. Brailsford Robertson; "The Structure and Metabolism of the Carbohydrates," Mr. L. A. Ray. 11—"Some Recent Advances in Cellulose Chemistry," Dr. J. C. Earl. 11.30—"Mutarotation and the Tautomeric Hydrogen Atom," Professor E. H. Rennie. 12.15—"Our Present Knowledge of the Structural Alteration of Glucose which precede Oxidation in the Tissues of Animals," Professor T. Brailsford Robertson.

Section C.—Geology and Mineralogy.

In Prince of Wales Lecture-room.—10 to 11.15—"Barrier Reef Problems and Methods Proposed for Solving Them," joint meeting of C, D, E, and M; "The Meteorology of Adelie Land," C. T. Madigan, joint C, D; "Contribution to Our Knowledge of New Guinea," R. Stanley, joint C, D; "The Bacchus Marsh Basin," Dr. C. Fenner, joint C, D; (a) "Graphical Methods for the Solution of Some Common Problems in Geological Mapping," (b) "The Yass Earthquake of March and April, 1924," (c) "Tidal Stresses as a Possible Secondary Cause of Earthquake," Professor L. Cotton, D section.

Section D.—Zoology.

10—Joint discussion on Barrier Reef. 12.15 p.m.—"The Life History of Ornithorhynchus," by Professor Launcelot Harrison.

Section E.—Geography and History.

10.12—Joint discussion by Sections C, D, E, and M on the Great Barrier Reef, Prince of Wales Theatre; 12.15—Mr. C. T. Madigan, "Antarctic Meteorology," Section E, room.

Section F.—Anthrology and Ethnology.

In the Section Room.—Thursday morning.—Rev. Jennison, "A Native Statement of the Origin of Aboriginal Intertribal Divisions." Mr. W. W. Thorpe—(1) "Some New Guinea Cultural Influences Found Among the Aborigines of Australia," (2) "Heliolithic Evidence in Australia, Tasmania, and New Guinea, and Traces of other Superior Cultures."

Section G.—Social and Statistical Science.

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Section H.—Engineering and Architecture.

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Section I.—Sanitary Science and Hygiene.

[illegible]

Section J.—Mental Science and Education.

[illegible]

Section K.—Agriculture and Forestry.

[illegible]

and Solution of the Prone Inland [illegible] Regeneration Problem," Mr. [illegible] Petrie.

Section L.—Veterinary Science.

Morning free for meeting of Australian Veterinary Association.

Section M.—Botany.

9.30—Sectional committee [illegible] discussion (geology, geography) on "Barrier Reef [illegible]." 11.45—Mr. H. H. Lewcock, B.A., "Preliminary Note on a Bacterium [illegible]." 12—Mr. H. J. Noble, [illegible] "Observations on the [illegible] Quarantine Measures in Australia."