

ACID TEST ON INDUSTRY

Work of State Chemistry Department

SCIENCE ALLIED TO COMMERCE

Through its Department of Chemistry South Australia applies an acid test on industry. Water, gas, milk, jam, bread, flour, cheese, butter, inflammable oils, explosives, and railway lines, all these commodities, and many more, are, from time to time, analysed by chemists of the State Department of Chemistry, and the State's health and pocket are safeguarded.

During 1916, when Australian wheat stacks were ravaged by weevils, the South Australian Department of Chemistry devised a method of treatment, which brought about a saving of £1,500,000 to the Commonwealth. That was only one of the department's scientific victories.

The South Australian Department of Chemistry, with Dr. W. A. Hargreaves in charge, was established toward the end of 1915, mainly for the purpose of performing the chemical work required by Government departments, but also for the application of scientific research to South Australian industries.

Since that time Dr. Hargreaves and his nine assistant chemists have performed wonderful, if unobtrusive, work on behalf of the State.

In one of the laboratories of the Chemistry Department in Kintore avenue there is a small bottle, with a smaller piece of ordinary looking white paper inside it. Around this bottle and piece of paper there hangs a story.

Quality Gas

Under the Gas Act the South Australian Gas Company is required to supply gas of a certain quality. Through the small bottle and its smaller piece of paper, Dr. Hargreaves and his assistants are able to tell whether or not the company adequately fulfils its obligations.

Into the Department of Chemistry laboratory a special gas pipe from a city main runs. Gas from this pipe, at least twice a day, is transferred into the bottle with its chemically treated piece of paper inside. If sulphur forms on this paper it tells the Department of Chemistry that the city gas supply is below requirements. It has, however, never done so yet.

If the Department of Chemistry, through its daily tests, sees that the gas supply is falling anywhere near the limit prescribed by the Act, the Gas Company is advised, and the company is always careful to see that the standard falls no lower.

As with gas, so with water. Regularly samples of water from South Australian reservoirs are sent to Dr. Hargreaves and his chemists for analysis, and through the guidance of their reports, the Hydraulic Engineer is able to keep the water supply of the State sweet and clean.

All kinds of foodstuffs collected by inspectors of the Metropolitan County Board and the Central Board of Health are sent to the department for analysis. Milk is examined to ascertain whether it is milk or milk and water. Apples are examined to determine whether they have arsenic on the skins; sausages are placed under test to detect sulphides; sauces are inspected to ascertain whether they contain proscribed preservatives; and vinegar, olive oil, honey, cheese, flour, pepper, salt, oatmeal, and almost every commodity which finds place in a grocery store at some time or another, comes under the eagle eyes and microscopes of the State chemists. Of the foodstuffs examined, about 10 per cent. are found to be impure.

Dr. Hargreaves, Detective

Romance stalks within the prosaic walls of the Department of Chemistry. Dr. Hargreaves, the principal of the institution, has played an important part in many South Australian criminal cases of recent years. It is his duty to make post mortem examinations to detect poisons and other things which have a vital relation to criminal cases. A chest containing a wonderful collection of drugs helps him. If a man or woman has been killed by poison Dr. Hargreaves first finds the poison, and then compares it with the standard drug contained in the all-important cabinet. Men and women have been brought within the shadow of the gallows, through the joint efforts of Dr. Hargreaves and his drug cabinet.

Though the drug chest at Kintore avenue is probably the most extensive in the Southern Hemisphere, it is not unusual for medicines which does not contain to come in for analysis. A few

weeks ago a medicine prescribed by an Adelaide herbalist came into the hands of the Department of Chemistry. Examination showed that it had been made of crushed date seeds and water.

Safe Explosives

An important function of the State Department of Chemistry is to see that inflammable oils and explosives are made and kept in such a way as to prevent accidents. All petrol pumps, inflammable materials, and oil storages must be approved by the State chemists, and explosives are not permitted to be sold until Dr. Hargreaves has inspected and passed them as safe. If he finds them unsafe they are either burned or sent back to their manufacturer.

Railway lines, boiler plates, and other metal articles are placed under test. By scientific examination it can be determined at Kintore avenue whether a railway rail or boiler plate is all that its specification says it should be.

The State Department of Chemistry has a soft spot in its heart for South Australian farmers. Soils and waters from farms and irrigation projects are examined and analysed. Another important part of the department's work is the examination of fertilisers. With fertilisers a novel method is employed to check dishonest practices. Manufacturers of fertilisers are compelled to state what their article contains, and Dr. Hargreaves and his chemists make another analysis, and the manufacturer's claim and the State chemists' finding are published side by side in the "Journal of Agriculture." The farmer is left to draw his own conclusions.

Great Weevil Fight

Outside its work on behalf of Government departments the Department of Chemistry allies science to industry. Perhaps its greatest victory in that sphere, if not from a chemical standpoint, from a commercial one, was won during the great weevil plague of 1916-17.

At that time millions of bags of Australian wheat were lying about waiting for shipment overseas, and the damage done by weevils was enormous. In South Australia Dr. Hargreaves was urged to try and find a solution of the problem, and upon the State chemist accepting the invitation, a committee was formed and war declared.

All previous methods of extermination were tried and found useless. Weevils were buried for weeks under the sea, and then were taken out apparently dead and placed upon blotting paper, but when dry they got up and walked away. Dr. Hargreaves and his committee began to talk about dead and permanently dead weevils, and were temporarily in despair.

Still they worked on to find a solution. Mr. W. J. Spafford, chief agriculture instructor, was a member of the committee, and he conducted a test of his own. He placed weevils in six bottles, sealed them, and awaited results. In 14 days the insects in four of the bottles were apparently dead, while those in the other two bottles were alive. It was found that the two bottles in which the weevils still lived had not been properly sealed. Again weevils were placed in the six bottles, and this time special care was taken to see that they were all sealed. After 14 days all the insects were dead.

Test That Saved Millions

The assumption drawn from Mr. Spafford's test was that weevils could not live if deprived of a pure air supply. The trouble was to put that principle into practice on a commercial scale.

Those in control of the wheat scheme in South Australia had placed a stack containing 9,000 bags of wheat at the disposal

of Dr. Hargreaves and his committee to play with. This stack was sealed as closely as possible, and inside a producer-gas engine was installed. By working this day and night for 30 days and burning coke a determined effort was made to deprive the weevils in the stack of life-sustaining air. At the conclusion of the 30-day test an examination was made, and there was not a single weevil left alive in the whole 9,000 bags. The problem was solved.

Quickly other stacks throughout the State and in Victoria and Western Australia were treated in similar fashion, and in one year it was estimated that £1,500,000 worth of wheat was saved.

The effort behind this victory of science over Nature is best shown by the quotation of figures relating to one minor experiment conducted by the Department of Chemistry during its fight against the weevil plague. Altogether 1,800 tests were made by one chemist to ascertain what happened to wheat when it was made to run up and down a test tube.

Other Victories

Though the saving of Australian wheat stacks from weevils was the most spectacular victory won by the South Australian Department of Chemistry, there have been others. A fact not generally known is that much of the water used in locomotives in this State is subject to what is technically called foaming. That is especially so in the highly mineralised waters of the north, where railway engines are not able to pull full loads because of the water foaming and clogging the engine. On the East-West line the question of water is a railwayman's nightmare.

Dr. Hargreaves and his chemists conducted an exhaustive test into this nuisance. They found the cause of the foaming, but unfortunately have not found a practical way of applying a remedy. The trouble is that use of untreated water by an engine immediately undoes the good previously done by the use of treated water, and the establishment of an adequately treated water supply is too tremendous a problem to be practicable.

Some time ago before the gypsum deposits of South Australia had been much exploited, a bulletin on this valuable commodity was issued by the State Chemistry Department. Since that bulletin was issued the gypsum industry has grown tremendously, and is still growing. Many enquiries come from America for that intensely valuable publication.

A recent examination was made into the tannin resources of the State. Another examination proved that excellent kalsomines can be made from a mixture of South Australian whittings, and tests have been made to ascertain what by-products are obtainable from Moorlands coal, and from other South Australian commodities, the commercial possibilities of which have not as yet been exploited.

So Dr. Hargreaves and his nine chemists work. It is doubtful if there is any South Australian for whom they have not performed some service in the course of their routine.

opportunities of the sister State, its music-lovers are not yet educated up to the standard of our own concert-goers. The concerts by our own musicians, and also those given immediately before by the visiting Kendall Quartet, were not so well attended as might have been expected from a musically-educated metropolis, though what was lacking in support of music was made up for in lavish hospitality and entertainment.

At the reception given by the University Conservatorium, Dr. E. Harold Davies said that Adelaide looked upon Melbourne as one of its musical suburbs, as in many respects it lagged far behind. Adelaide had led by a length of years in the establishment of a conservatorium and a Chair of Music, the latter in South Australia having been made self-supporting by means of the public examinations in music, which kept the money in Australia, and was used for musical self-development. While in Melbourne he had not heard anything to compare with what was being done in Adelaide. The object of the visit of the South Australians was not for self-advertisement, but to encourage a reciprocal spirit. He would like an exchange of talent. They had brought of their best, and would expect Melbourne to do the same.

Miss Maude Puddy, Mus. Bac., created a great impression in the Victorian capital by her work as a solo pianist. Leading musicians acknowledged that nothing so fine in piano work had been produced there for a long time. It is possible that she will be approached to make another visit, when a series of pianoforte recitals may be given.

NEWS. 2.8.26.

UNIVERSITY CELEBRATIONS

Free Churchmen Indignant

SIDESTEPPING ALLEGED

"Dr. A. N. Thomas (Bishop of Adelaide) said that he would be pleased to see Nonconformists at the Cathedral service in connection with the University jubilee celebrations. This is manifestly sidestepping the issue," said the Rev. A. C. Stevens, M.A. (chairman of the Congregational Union) today.

"We have the sad spectacle of the University of Adelaide asking the Church of England to conduct a public thanksgiving service for the Nonconformist foundation of the University," he added. "We do not regard as satisfactory the reading of the lessons. The services can hardly be called representative of the Free Churches."

"I was informed that Sir George Murray (Chancellor of the University) had been asked to read the lessons. No reference was made to Prof. Wilton reading a lesson in his capacity as president of the Council of Churches. This is evidently a death-bed repentance on the part of the authorities concerned. As such, it cannot be claimed to be anything like adequate representation of Nonconformist churches."

"The Melbourne precedent, of which Dr. Thomas spoke, was in 1906, which was prior to the great Lambeth conference movement for reunion before the war, and prior to the present state of growing unity between the churches. It would probably be based on British precedents, where there was a State church. There is no State church in Australia."

The Rev. A. C. Hill, B.A., B.D. (secretary of the Baptist Union) stated that it would have been much more desirable if the service had been held at Elder Conservatorium, where heads of all the denominations could have participated. It should be remembered that the Baptist, Congregational, Presbyterian, and other churches had most to do with the founding of the University, he remarked.

REG. 3.8.26.

News has been received in Adelaide that Dr. E. Britten Jones, who is now in London, has passed the M.R.C.P. examination. He has also obtained the M.A. degree at Oxford. Before returning to Australia he intends to spend a few weeks in Vienna.

MAIL 31.7.26.

Chamber Music

In the Conservatorium Hall last Monday night the Conservatorium String Quartet, fresh from its visit to Melbourne, bore the brunt of the work in a chamber music recital, which included two works, not heard here before. Beethoven's "String Quartet in E minor, Op. 59, No. 2" was a study in delicate tones, and varied from a particularly melodious and restful adagio, through a dainty allegretto to a final presto for the combined instruments. Mr. Schilsky led, with Miss Kathleen Meegan as second violin, Miss Sylvia Whittington viola, and Mr. Harold Parsons cello. After years of playing together an excellent ensemble has been attained, which, after all, is the essence of perfect chamber music. The four gave a fine example of team work, in spite of the fact that they are all first-class soloists.

Mr. Clive Carey was at his best in a group of new and extremely difficult French songs, which he introduced to Melbourne lately. He was in excellent voice, and compassed the vocal difficulties with consummate ease. The numbers included songs by Reynaldo Hahn, Henri Duparc, Maurice Ravel, and Claude Debussy, and were built upon texts by well-known French writers. Ravel's "The Peacock" was a natural history story, dressed in effective garb, while Debussy's "Mandoline" adopted the favorite French style of classic imagery. Mr. Carey had supplied excellent translations.

As accompanist, Miss Maude Puddy did some wonderful work. The modern high-class song demands the gifts of a virtuoso as accompanist, and nothing better has been heard than the Adelaide pianist's delightful treatment of the solo accompaniments. An ovation rewarded the two artists at the conclusion of the numbers.

Music in Melbourne

Private information concerning the visit of the quartet and other Adelaide musicians to Melbourne leads to the supposition that in spite of the superior size and