

Since 1922 the Carnegie Trust has also made grants to the libraries of learned societies participating in the 'outlier library' system associated with the National Central Library, and help has also been given to the regional system of library co-operation, particularly for the compilation of a nucleus union catalogue of all the books available. With grants from 1926 onwards, for book purchase by small municipal libraries, and for supplying basic collections of books to boys' and girls' clubs, to the National Library for the Blind, the Seafarers' Education Service and the British Sailors' Society, as well as to institutions which exist to improve the general standard and status of librarianship, the total expenditure of the Trust upon library services, when existing commitments have been discharged, will amount, in round figures, to £1,640,000.

In the field covered by the Arts Committee of the Trust, the chief event of 1949 was the creation of the independent Drama Board. Financial considerations have precluded the trustees contemplating the establishment, as recommended in the Young-husband report, of a Carnegie School of Social Work, in association with an appropriate university, but a grant of £200 has been made to enable the National Federation of Women's Institutes to repeat in the Isle of Man the pioneer work carried out successfully in the Channel Islands. Satisfactory progress is reported in the two schemes concerned with juvenile delinquency and also from the Young Farmers' Clubs. The Mobile Club experiment in the Island of Mull has led to the formation of the permanent youth clubs and to appointment by the local education authority of a permanent youth officer for the island.

## SIDNEY GILCHRIST THOMAS

THE centenary of the birth of Sidney Gilchrist Thomas on April 16, 1850, was commemorated by the Iron and Steel Institute by a special lecture, delivered by Mr. James Mitchell on April 26 during the annual meeting of the Institute.

Educated at Dulwich College and the Birkbeck Institute, London, Thomas intended to adopt medicine as a career; but the untoward death of his father compelled a change of plan. He became a clerk at the Thames Police Court in 1867; but he spent his time outside office hours in the study of science, taking such examinations in metallurgy of the School of Mines as were open to him as an external student. His interest in the removal of phosphorus from iron appears to have been aroused about 1870 while still a student at the Birkbeck Institute. From a study of the available literature he concluded that the non-removal of phosphorus in the Bessemer process was due to the siliceous lining of the converter and the siliceous character of the slag. A period of experimental work at home, later continued by his cousin, Percy Gilchrist, chief chemist at the Blaenavon Works, followed, and in a comparatively short period of time he was able to announce to the Iron and Steel Institute the discovery of the basic Bessemer process, by which ductile steel could be made from pig iron high in phosphorus, a discovery which, by opening up a new section of the iron-bearing riches of the world, revolutionized the steel industry.

The story of his announcement is dramatic. In September 1878 Lowthian Bell read a paper before the Iron and Steel Institute "On the Separation of Phosphorus from Pig Iron", in which, working on the

reactions, as they conceived them, which occur in the puddling process for the production of wrought iron, Bell and other metallurgists were endeavouring to eliminate phosphorus by washing processes, the chemical detergents being oxide of iron and similar materials. The most interesting feature of the discussion of this paper was that it provided the opportunity for Thomas to make the first public intimation of his own success in solving the great metallurgical problem of the time. An eye-witness records: "I remember distinctly the pitying smile of derision and the stony stare which pervaded the countenances of the distinguished assemblage. No one thought it worth while to refer to Mr. Thomas's claim or ask him 'How he did it'."

Within a year a paper was presented which was to establish the truth of the young man's claim. A paper by Thomas and Gilchrist on "The Elimination of Phosphorus" was prepared for the autumn meeting of the Institute held in Paris in 1878. The time, however, was not available to permit of it being read and discussed; but at the spring meeting of the following year a complete process, commercially proved, was given to the world. The delay at the Paris meeting had one further important, and probably decisive, result on the development of the process. The pre-print of the paper and a meeting with Thomas interested Mr. E. Windsor Richards so much that he obtained the consent of his directors to proceed immediately with trials on a works scale at Bolckow Vaughan's plant at Middlesbrough, the results of which added immeasurably to the rapid commercial development of the process. When in due course the subject was discussed by the Iron and Steel Institute during the spring of 1879, the meeting took a form which can be described without exaggeration as an international symposium, the speakers taking part coming from almost every country which at that time had an interest in the solution of the phosphorus problem. The basic Bessemer process was born.

Thomas was industrious to a remarkably high degree, with a highly developed sense of duty and responsibility, and a capacity for liking, and being liked, by a wide diversity of people. It is on record that he appealed to such very different individuals as Andrew Carnegie and William Ewart Gladstone. There is a repeated suggestion in his letters of a strong sense of fun, maybe even of mischief. He certainly possessed the truly great man's first essential characteristic of being ironically amused at his own apparent importance in the sight of others. He had a streak of almost super-caution, and did not relinquish the small but sure competence of his salary as a clerk of the Thames Police Court until the first royalties from his process became available. He also had 'an eye to the main chance', but it was an altruistic eye. Much more successful than many luckless inventors of the period in securing a substantial financial return from his invention, it is worth recalling that these gains—and they must have been considerable—were left, on his early death in 1885, to his sister for the benefit of the workers, or, as he wrote to her, "in doing good discriminately". For our purposes his outstanding characteristics were his pertinacity, patience, and a real ability to lead and inspire those with whom he was associated. Attractive as it may be to dwell on what must have been a very pleasing personality, it is his immense contribution to technical knowledge, the methods by which he made it, and their implications, which still remain important to-day.

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