STONYHURST COLLEGE OBSERVATORY

THE closing of Stonyhurst Observatory on December 31, 1947, brings to an end more than a century of scientific work. Founded in 1838, the Observatory has been staffed and maintained by the Society of Jesus. Its first work was purely meteorological, and this has been continued throughout its existence. The Royal Society Commission, which in 1867 replaced the Board of Trade in the organisation of meteorological observations in Britain, selected Stonyhurst as one of the seven principal stations, each of which it supplied with standardized equipment and continuously recording instruments. For many years these stations formed the mainstay of British meteorology.

Stonyhurst Observatory was, however, early in its existence, to extend its activities to geophysics and astronomy. At the instance of Sir Edward Sabine, regular magnetic measurements were started by Perry in 1861, and continuous magnetic recordings a few years later. During the years 1868–70, Perry and Sidgreaves carried out an extensive magnetic survey of France and Belgium. In more recent years, seismology has also been included in the regular programme.

Astronomical work had already engaged the attention of Stonyhurst when the Observatory gave refuge to Secchi during the Italian troubles of 1848. Perry's interest in solar physics defined the direction which this work was to take. In 1881 he commenced the series of daily solar drawings, which were included in the routine of the Observatory for sixty years. To these drawings Sidgreaves and Cortie added the spectroscopic study of sunspots. In their pioneer research on the *B*—*D* region, which supplemented the work of Lockyer and Smart, they were among the first to detect molecular bands, and to identify the numerous vanadium and titanium lines. In addition, Cortie found time to use the material provided by the simultaneous solar and magnetic observations for an independent analysis of the interrelation of solar and geophysical phenomena.

During the years 1870–1914, the Stonyhurst astronomers played leading parts in a number of scientific expeditions, including both the transits of Venus (1874 and 1882), and seven solar eclipses. Astronomers will remember in particular the Royal Astronomical Society's eclipse expedition to French Guiana in 1889, which Father Perry led to a successful conclusion only at the cost of his life.

The considerable programme of solar and geophysical work and the relatively modest equipment of the Observatory made a continuous programme of stellar work impracticable. The occasional researches, mainly on the spectra of novæ, carried on within these limitations, were not for that reason desultory or ephemeral, but showed at times an eye for experimental technique of which a larger institution would not have felt ashamed. Stonyhurst was one of the few observatories to secure photographic spectra of Nova Aurigæ in 1892, the first nova to be so photographed. For this purpose Sidgreaves and Cortie used a slitless spectrograph with a collimated beam, instead of the objective prisms used at Harvard and at South Kensington. In this they anticipated Wadsworth's suggestion by a decade, and its common adoption by a still longer time. A similar ingenuity stamped the attempt to apply Orbinsky's length-of-spectrum method to the measurement, from objective-prism spectra, of the radial velocity of the expanding shell of Nova Aquilæ (1918). The astronomical work of Stonyhurst will always be associated with the name of Perry, but scarcely less credit is due to the originality of Sidgreaves, and the effective collaboration of O'Connor. While not so great an astronomer, Cortie contributed much to the spread of astronomical knowledge among a wider public.

The growing disparity between modern observational needs and the limited equipment of a private observatory has caused Stonyhurst in more recent times to return to the geophysical and meteorological work for which it was originally founded. This selfless task has been performed for many years by Father J. P. Rowland, the retiring director, whose advancing years and failing health have precipitated an inevitable though regretful decision. He will have the satisfaction of having completed a century of recording, and will terminate, temporarily at least, a line of priest-scientists whose solid achievement in their self-imposed task will be most readily admitted by their fellow physicists and astronomers.

P. J. TREANOR

THE ASSAYING OF PENICILLIN

THE first joint meeting of the Biological Methods and the Physical Methods Groups of the Society of Public Analysts and other Analytical Chemists, held on January 29 in the Barnes Hall of the Royal Society of Medicine, was devoted to methods of penicillin assay—their purpose, scope and validity. The plenitude of highly ingenious assay techniques in the chemical and physical and in the biological fields respectively were briefly surveyed by the opening speakers of the two sessions, Dr. E. Lester Smith and Dr. N. G. Heatley. A dozen or so specialized physical instruments have been pressed into service, several for more than one method, as have many more distinct chemical reactions and physical and microbiological techniques not involving instruments.

There were really two distinct problems under discussion, namely, the assay of *total* penicillin, and the assay of *individual* penicillins, at least five of which are now recognized as liable to be present in appreciable proportions in commercial penicillin supplies. It is perhaps clearer to adopt this division of the papers and discussions, rather than into non-biological and biological methods, as was done at the meeting.

Total penicillin may be assayed non-biologically with the aid of the polarograph, polarimeter, colorimeter (three methods), fluorimeter, ultra-violet spectrophotometer or Warburg manometer. Nevertheless, most of the people who do daily routine assays have simpler tastes and appear to favour the burette. Many of the other methods are now only of historical interest; the trouble with some of them is that they require more labour to carry them out than the biological methods they seek to replace, without offering adequate advantages by way of compensation. It is only fair to add that the biological methods have themselves been streamlined to cut down manipulation and improve accuracy, since some of these tests were invented in the early days of penicillin manufacture.

Two titration methods are available, each with minor variants. The first, the subject of a paper read by Miss S. J. Patterson, commends itself by extreme simplicity, being virtually a determination of saponification value. Dilute alkali quantitatively opens the