CENTENARIES

Bell, Charles (1774-1842)

CHARLES BELL, the British discoverer of the functional specialisation of the nerves, was born in Edinburgh November 1774. He inherited from his mother a passion for drawing. While still a student he published his *System of dissections* (1798) illustrated by his own drawings. Four years later he published a series of engravings of the nervous system including the brain to illustrate the lectures of his brother John, the anatomist. In 1804 he contributed the portion on the nervous system to his brother's book *Anatomy of the human body*.

His book *Anatomy of expression* (1806) explained in a pleasant style and with striking pictures the mechanism of the movements of expression and criticised the works of art from that point of view. This was the first book of its kind. It went through several editions. The readers of *Current science* will be interested to know that the Nawab of Arcot procured a copy and had it bound in red morocco and satin. His *New idea of the anatomy of the brain submitted for the observations of his friends* (1811) announced his discovery that "the nerves are not single nerves possessing various powers, but bundles of different nerves distinct in office and that the nerves of sense, the nerves of motion and the vital nerves are distinct throughout their whole course." Thus was established for the first time, the existence of sensory and motor nerves. He continued his investigations for a number of years and gave the full result in 1830 in his *Nervous system of the human body*. Bell himself estimated its value with the words "they will hereafter put me beside Harvey". He was knighted and was presented the Royal Society's medal in 1829.

He wrote several books and after he took up the chair of surgery in the University of Edinburgh he published the *Institutes of surgery* (1838) and the *Practical essays* (1841) which were based on his observations in the wards.

Bell died of anginopectoris at Hallow Park, 28 April, 1842.

Baird, Andrew Wilson (1842-1908)

ANDREW WILSON BAIRD, a British Indian engineer, was born at Aberdeen 26 April, 1842. He received his education at the Military college of the East India Company at Addiscombe and at the Royal Military Academy at Woolwich which absorbed it in 1861. He arrived in India early in 1864 as special assistant engineer of the Bombay harbour defence works and the reclamation work of the harbour foreshore. Having seen field service as railway engineer in Abyssinia in 1868 he joined the Great Trigonometrical Survey of India in 1869. When the Survey undertook tidal observations for determining the mean sea level as a datum for the survey, Baird was deputed to study the subject including reduction by harmonic analysis, under Lord Kelvin. Baird's book *Manual of tidal observations and their reduction by the method of harmonic analysis* came out in 1886. His work, which first began in the gulf of Cutch, was later extended to all the principal Indian ports, from Aden to Rangoon. He contributed to the Royal Society a paper on the tidal repercussions on India of the great volcanic eruption of Krakota in Java. Baird's tidal investigations in India by new methods are acknowledged as pioneer work which led to extensive international developments along similar lines.

From 1885 to 1897 Baird was employed successively in the Royal Mint in Bombay and Calcutta. He died suddenly of heart failure in London 2 April 1908.

S. R. RANGANATHAN.

University Library,
Madras.

INTER-UNIVERSITY BOARD, INDIA

TWENTY-SEVEN subjects have come up for discussion before the Board at the 17th annual session held at Annamalainagar in January 1942, but most of these possess narrow administrative rather than broad academic importance. Among these subjects reference may be made here to a few outstanding ones. The question of securing a certain amount of uniformity in the subjects of study for the Matriculation Examination deserves support; but the sub-committee's recommendations in this respect are not quite satisfactory in regard to the compulsory group, and still less satisfactory in regard to the optional group. In the latter case the committee seems to have overstepped its limits and indicated not only the material to be taught but in one instance also the manner in which it should be taught.

The desirability of founding an Inter-University Publication Trust Fund was a matter upon which various opinions were expressed by the universities. This is rather unfortunate; for it seems reasonable to expect that universities should be interested in the dissemination of knowledge and that they should welcome the publication of their research work by a central organization such as the Inter-University Board. The publication, however, must not be restricted to the theses submitted for the higher degrees as suggested in the resolution, but must extend to all useful knowledge which would further the interests of university education.

Thus, for instance, a question which came up for discussion was the desirability of co-ordinating the work of training colleges and standardizing the degrees granted by Indian universities in Teaching. For an intelligent consideration of this problem the Board must have before it up-to-date information regarding present practices in various parts of India. It is right and proper that money must be made available for the preparation of a booklet which would give this information.

It may be argued in this connection, that the Bureau of Education under the Government of India does this kind of work in its annual and quinquennial Reports. But it must be remembered that the Bureau is mainly interested in education below the university standard; nor is it interested in collecting and presenting that kind of information which university authorities need.

In the budget statement set forth on page 69 of the Report under review it may be noticed that out of nearly Rs. 20,000 that was spent during the year, no less than Rs. 15,000 was devoted to such items as honorarium, salaries, and travelling expenses. The only publication of some value, upon which a sum of Rs. 2,000 has been expended, is the "Handbook of Indian Universities".

D. S. GORDON.

SCIENCE NOTES AND NEWS

Classical and Quantum Mechanics.—The analogy between classical dynamics and quantum dynamics has been pursued far enough, and it is well known that all the main principles and results of the classical theory reappear in the quantum theory in a generalised form. One such important result is that the Hamilton-Jacobi partial differential equation of classical mechanics follows from Schrödinger's wave equation in the process of going to the limit $\hbar \to 0$. An alternative and fruitful method of looking at this relationship has been recently given by Whittaker (*Proc. Roy. Soc. Edin.*, 1941, **61, 1**) who has shown that, by suitably modifying Hamilton's principal function, the differential equation satisfied by it is *rigorously* equivalent to Schrödinger's wave equation. The modification is based on the use of the quantum mechanical commutation rule, and hence, in principle, Whittaker's method is equivalent to the older methods but it appears to be mathematically a more powerful method, and leads to several applications in pure mathematical analysis. Whittaker's method uses a remarkable result due to Dirac relating to the probability amplitude $(q|Q)$ namely that its logarithmic derivatives with respect to q and Q furnish the momenta p and P. Here q and Q are the co-ordinates at instant t and the previous instant T respectively. As applications of the theory are given very elegant quantum mechanical deductions of the Mehler and Lebedeff formulæ for the Hermite and Laguerre functions respectively.

The power of Whittaker's method is illustrated in another paper by Copson (*ibid.*, pp. 37-54) who has shown that the method provides a very simple and direct way of finding an elementary solution of the general partial differential equation of the parabolic type. Since from the analytical point of view the Planck's constant $\hbar$ appearing in the commutation relation may be any constant real or complex, the algebra used is the one which is given by $pq - qp = 1$.

In a further paper in the same issue (p. 61), Erdélyi has considered continuous orthogonal systems and derived formulæ relating to bilinear generating functions (of the type of Mehler's celebrated formula) associated with such systems. He has obtained the very interesting result that Whittaker's proof of the derivation of the Mehler formula applies almost literally to the continuous case also, and yields the bilinear generating functions of parabolic cylinder functions and of confluent hypergeometric functions.

B. S. M.

The eradication of Lantana has been a vexed problem of Indian land management which till now has defied a complete and satisfactory solution. High hopes were once entertained of biological control through an imported parasite but the results were disappointing. Chemical methods have also been tried and Mr. A. L. Griffith presents (*Forest Bulletin No.* 106, Sylviculture Series, Manager of Publications, Delhi, 1941. Price As. 6 or 7*d.*) the results of his experiments on the use of sodium chlorate spray in the control of Lantana. Mr. Griffith uses the word "control" advisedly to clear up some misunderstanding which arose in the early years of this work over the "rather unfortunate use which was made of the word 'eradication' in connection with it". The spray controls (in the sense that the weed is suppressed till suitable forest regeneration is established), but does not eradicate and the author presents data which work the cost of control at about Rs. 10 (with sodium chlorate at As. 8 a lb. in bulk) an acre; three sprayings are prescribed, preferably one each in February, April and September. It is stated that the spray in the concentration and technique prescribed has no toxic effect on the soil and the subsequent regeneration. Two plates of photographs illustrate the possibilities of the method but better placing and numbering of these good photographs could make a comparison of the areas much simpler than now when "Plate II, Fig. 1" is to be compared with "Plate I, Fig. 2" and "Plate II, Fig. 2" is to be compared with "Plate I, Fig. 2" and with "Plate II, Fig. 1". The pictures would retain all their point and be easier to compare if the two plates faced or immediately followed each other and