Since 1922-23 a very remarkable change has taken place in what may be called the balance of university studies—the distribution of full-time students among the main subject groups. Between 1913-14 and 1922-1923 the returns (in which, as already stated, Oxford and Cambridge were not included) showed a fall of more than five per cent in the percentage of the total represented by students in the arts group (including theology, fine art, law, music, commerce, economics, and education), whilst the percentage represented by the medical group rose by more than three, and the percentage of the other three groups, pure science, technology, and agriculture, rose very slightly. Since 1922-23, on the other hand, the returns, including now Oxford and Cambridge, show a rise in the percentage of the arts group from 40.8 to 51.7, whilst the number of students in that group has risen by above 3500, despite a fall of more than 2000 in the grand total of students. The position of the pure science and agriculture groups has remained fairly steady, but for the medical and technology groups both percentages and actual numbers have markedly decreased, namely, from 11,866 (26.6 per cent) and 5567 (12.5) to 8415 (19.9) and 3970 (9.4) respectively. The greatest changes were in Scotland, where the percentage of the medical group fell from 35.2 to 22.7, while the percentage of the arts group rose from 38.9 to 56.1.

This extraordinary rise in favour of the arts group of subjects is attributed by the University Grants Committee to the attraction exercised, during a period of bad trade and restricted opportunities in other professions, by the improved prospects offered by the profession of teaching. This explanation is supported to some extent by statistics of teachers in grant-aided secondary schools in England and Wales. Between 1922 and 1927 their total number increased by 676, while the number of those of them who were university graduates increased by more than two thousand,—from 11,937 to 14,019—the increases year by year being 241, 419, 552, and 870. Clearly the teaching profession has been absorbing a largely increasing proportion of the universities' output of

graduates. The falling off in the number of the technological students is, the Committee considers, due to the continuance of serious depression in many industries.

A similar rise in favour of the arts group of subjects and decline in number of students of technology are disclosed by recent statistics of university education in Prussia. The years 1924 to 1927 have seen in Prussia a steady decline in the student enrolments of the Technischen Hochschulen from 8603 to 7936, whilst most of the subjects grouped under the heading of arts show an increase, which is most noticeable under modern languages. Of interest in this connexion are the following extracts from the United States Bureau of Education's biennial survey of higher education, 1924-26: "Immediately after the War . . . the idea gained ground that educational institutions should emphasize training to very specific objectives. The two-year period under review gives many indications that there has been a decided reaction . . . a returning faith, if not in the disciplinary value of the so-called cultural subjects, at any rate in their practical value and in the habits of application developed by the exertion required to master them."

A new table, introduced for the first time last year, classifies research and other advanced students under the branches of study in which they were engaged. Under certain branches of science it gives the following numbers of full-time advanced students: chemistry 511, engineering 141, physics 132, botany 83, geology 52, mathematics 47, zoology 43, metallurgy 42, agriculture 35, physiology 33. Commenting on the dominant position of chemistry, the Committee suggests that the other sciences, and especially the biological sciences other than medicine, have been far too much neglected by advanced students at the universities. It observes also in regard to chemistry that the immediate demand is more for men who have combined a study of this subject with such other subjects as engineering, agriculture, bio-chemistry, and botany than for men whose special knowledge is confined to the ordinary branches of pure chemistry.

Annual Visitation of the Royal Observatory, Greenwich.

THE visitation of the Royal Observatory, Greenwich, took place on Saturday, June 2, and was attended, as usual, by a large gathering of astronomers and their friends. The Astronomer Royal presented his report for the year ended on May 10 last.

The usual observations of sun, moon, planets, and stars were made with the transit circle. The moon's longitude was 6.2" in advance of that given by Brown's tables. The residual has been diminishing by 0.2" per annum since the new tables were introduced in 1923. The latitude is systematically south of the tables by $\frac{3}{4}$ ". It will be remembered that Brown removed the constant term of 1" which Hansen had applied to the latitude, but the observations show that some such term is needed. The catalogue of 11,000 stars between declination 32° and 64° is making good progress, and should be finished in 1930. The stars selected as comparison stars for Eros in 1931 are also being observed; they are so closely packed that it is difficult to get sufficient observations of each of them.

A re-discussion of the declinations of stars near the pole shows that there is no evidence of secular change of latitude since the erection of the transit circle in 1851. The observations would scarcely permit of a greater change than 0.1" per century. The observa-

tions with the Cookson floating zenith telescope have been discussed both for latitude variation and aberration. The aberration constant for the seven years 1919-26 is 20.447"; that for the previous seven years was 20.442"; the corresponding values of the solar parallax are 8.814" and 8.816". The parallaxes of 39 stars were determined from photographs with the Thompson equatorial, bringing the total up to date to 369 stars.

Spectroscopic observations of the 'colour-temperature' of early-type stars have been continued with the 30-inch reflector; the spectroscope has been modified by the substitution of a mirror for the lens; this enables the investigation to be carried farther towards the red end of the spectrum, which previously was in bad focus. The micro-photometer has also been modified to permit shorter sections of the spectrum to be measured, thus avoiding regions of absorption. The 30-inch reflector was also used for the photography of comets Grigg-Skjellerup and Pons-Winnecke. The latter was photographed when very near the earth, its angular motion being nearly equal to that of the moon. Its nucleus at that time was quite small and stellar, permitting accurate measures to be made.

The astrographic equatorial is being used for

determining proper motions in the Greenwich zone, by re-photographing fields taken twenty-five to thirty years ago. The zone from declination 73° to 77° has been under observation during the year. Special attention has been paid to stars measurable as double stars on the plates; Dr. Groot published a paper on these stars in the *Mon. Not. R.A.S.* for last November.

The egress of Mercury at the transit of last November was observed both visually and photographically. Three consecutive transits of Mercury (those of 1914, 1924, and 1927) have been well observed at Greenwich; the first of the present century, that of 1907, was also seen by glimpses, but the contacts could not be observed.

The mean area of spots on the sun in 1927 was practically the same as in 1926. The first four months of 1928 show no appreciable change. The indications at present point to a flat maximum like that of 1907 and lower than that of 1917. The curve for the last four cycles supports the result obtained from magnetic polarities of spots, that the complete cycle comprises two eleven-year periods. An interesting album was exhibited showing photographic traces of the more remarkable magnetic storms in juxtaposition with photographs of the sun's disc at the time; in most cases there was a large sunspot near the central meridian, or a region that had been active not long before. The subject is under further investigation.

The Astronomer Royal refers with satisfaction in his report to the successful results obtained at Giggleswick in the solar eclipse of June 29. One investigation that failed at that time, the comparison of the calcium doublet in the infra-red with the *H* and *K* lines, was afterwards carried out at Greenwich with a larger dispersion. The line at 8542 Å. was found to be somewhat more intense than *K*. Preparations are being made for observing the eclipse of 1929, total in the Malay peninsula; Dr. Jackson and Mr. Melotte are going, and will make further investigation of the gravitational bending of light.

Magnetic observations are now made at Abinger. The results for the last three years are:

	Decl. W.	Hor. Force.	Vert. Force.	Dip.
1925	$13^{\circ} 22.7'$	0.18597	0.42946	$66^{\circ} 35.1'$
1926	$13^{\circ} 10.4'$	0.18581	0.42947	$66^{\circ} 36.3'$
1927	$12^{\circ} 58.4'$	0.18575	0.42932	$66^{\circ} 36.2'$

The result for 1925 is the mean of the ten months February–November. The greatest daily movement of the air was 1003 miles on Feb. 11. Interesting traces of the sudden variations in temperature, direction of wind, and barometric pressure on this day, due to the passage of a 'line-squall,' were exhibited. The rainfall for 1927 was 27.78 inches, being 3.54 above the average. There were 82 entirely sunless days, the total bright sunshine being 27.4 per cent. of the possible amount.

The time service is now based on weekly observations with a small reversible transit instrument; it is found that the results of this differ in the mean by 0.09 sec. from those with the transit-circle. The Shortt clocks are so reliable that their rate can be trusted for a week. With reference to the distribution of Greenwich time from the broadcasting station at Rugby, the Astronomer Royal notes that the distribution of time by galvanic signals was suggested by Airy in his report for 1849 and carried out on a small scale in 1852. Note is made of the indebtedness of the time department to the enthusiasm, care, and patience of Mr. Bowyer.

A. C. D. CROMMELIN.

University and Educational Intelligence.

CAMBRIDGE.—Dr. A. E. Barclay, Christ's College, has been appointed lecturer in medical radiology and electrology. Mr. W. N. C. van Grutten, King's College, has been appointed an assistant secretary to the Appointments Board.

Prof. G. H. Hardy gave the Rouse Ball lecture on June 6 on the subject "Mathematical Proof."

The chair of astrophysics was partially endowed by an anonymous donor in 1913, and it is reported that this donor has now paid over £12,000 to the University, a sum greater than the money originally offered to the University.

LONDON.—The title of reader in physics in the University has been conferred on Miss M. O. Saltmarsh as from May 17 last, in respect of the post held by her at Bedford College. Dr. Saltmarsh studied at Girton College, Cambridge, and for two periods was engaged on research work in physics at the Cavendish Laboratory. Since 1910 she has been respectively demonstrator, assistant lecturer, and lecturer at Bedford College. She was granted leave of absence by the College Council to give visiting lectures to the department of physics at Vassar College, Poughkeepsie, N.Y., U.S.A., in 1920–21. Her recent published work has been on spectrum analysis.

Applications are invited for the Graham Scholarship in pathology, value £300 per annum, and tenable in the first instance for two years, founded to enable "a young man to continue his pathological researches and at the same time to secure his services to the school of advanced medical studies connected with University College Hospital as a teacher under the direction of the professor of pathology." Applications must reach the Academic Registrar, University of London, South Kensington, S.W.7, by June 26.

The following post-graduate studentships are being offered by the Council of Bedford College for Women: Amy Lady Tate research scholarship, value £125 for two years, and an anonymous research studentship, value £100 for one year. Candidates must be graduates of Bedford College in the faculty of arts or science. Applications must reach the Secretary of the College, Regent's Park, N.W.1, by June 27.

THE Research Prize awarded by the Scientific Club of Winnipeg for the best research work done in the University of Manitoba during a period of three years by a recent graduate, has been divided between Leonard B. Clark and Charles F. Goodeve, whose work was carried on in the Departments of Zoology and Chemistry respectively.

THE Streatfeild Research Scholarship in medicine and surgery, the annual value of which will probably be £250 and the tenure three years, will shortly be awarded. Applications, which should state the nature of the proposed research, the place where it will be carried out, and the status of the applicant, should be sent to the Registrar, Royal College of Physicians, Pall Mall East, S.W.1, by, at latest, June 29.

VACATION courses in glass-blowing and instrument-making have been arranged for by the Society for the Advancement of the Training of Instrument Makers (Vereeniging tot Bevordering van de Opleiding tot Instrumentmaker), for the latter half of August, in the Physical (Cryogenic) Laboratory of the University, Leyden, Holland, particulars of which are obtainable from Dr. C. A. Crommelin of that laboratory.