[1835–1910]. Some Account of the Fundamental Discoveries of the Great Pioneer of the Bio-chemistry of Crystallo-colloids in Living Cells." This may be regarded as supplementing the biographical notice of Ringer's career, and of his work as a clinician, which is to be found in the *British Medical Journal* of October 29, 1910.

WE have received from Messrs. E. Merck, of Darmstadt, a copy of the third German edition of their "Index" of pharmaceutical preparations. Eight years have elapsed since the second edition was issued, and the index now forms a handsome volume of nearly 400 pages. Copies of the new edition can be procured from the London agent of the firm.

THE properties of binary mixtures of some liquefied gases are described in the Journal of the Chemical Society by Dr. B. D. Steele and Mr. L. S. Bagster, of Melbourne University. The mixtures chosen were those of sulphur dioxide with hydrogen bromide, and hydrogen sulphide with hydrogen bromide and with hydrogen iodide. The vapour pressures were plotted for a series of temperatures from $-35°$ to $-75°$. A mixture of hydrogen sulphide and hydrogen bromide in the proportion of 60 to 40 was found to have a minimum vapour pressure (or maximum boiling point, analogous to those observed in mixtures of water with the halogen acids), in spite of the fact that the solutions are non-conductors and have given no evidence either of ionisation or of association. Mixtures of hydrogen sulphide and hydrogen iodide, on the other hand, gave direct linear relationships between total vapour pressure and composition (of liquid) and between the vapour pressures of the two constituents and the concentration of the liquid, thus adding another to the very short list of pairs of liquids which obey Raoult's law throughout the whole range of compositions.

THE fourth volume of the Journal of the Institute of Metals is now available. It has been edited by Mr. G. Shaw Scott, the secretary of the society, and copies may be purchased at the offices of the institute, price 21*s*. net. The greater part of the volume consists of the papers of scientific interest read at the annual autumn meeting of the institute held in Glasgow last September, abstracts of which were published in NATURE of September 29 (vol. lxxxiv., p. 421). These papers are in the volume supplemented by written communications from eminent authorities after the papers were read. The first May lecture, which was delivered by Prof. W. Gowland, F.R.S., is also included, together with a series of abstracts of papers relating to the non-ferrous metals and the industries connected with them.

OUR ASTRONOMICAL COLUMN.

SPLENDID METEOR ON JANUARY 25.—Mr. W. F. Denning writes:—"St. Paul's Day, January 25, has been noted in past years for occasionally supplying very large meteors, and it has maintained its character this year.

"A fireball was seen at 7h. 5m. p.m. by Mr. J. L. Haughton, of Birmingham, falling very slowly from the region of Aldebaran in Taurus to κ Orionis. The meteor was more brilliant than Venus at her best, but there were some clouds in the sky, which prevented the best effects being observed and interfered with the accuracy of the record. Near Leeds, Mr. J. H. Park witnessed the meteor sailing very slowly along from the north-west to south-east, and passing south-west of the Pleiades. The heavens were much overcast, and only a few stars visible.

"The probable radiant of the fireball was in Cepheus at $330°+58°$, and it apparently belonged to the same stream as that which supplied the magnificent fireball of January 25, 1894. The recent one passed from over Monmouth to Wiltshire at a height of about 83 to 46 miles, but additional observations are required."

NOVA LACERTÆ.—In No. 4466 of the *Astronomische Nachrichten* Dr. Max Wolf publishes a reproduction of the region about Nova Lacertæ from a photograph taken on January 2 with an exposure of thirty-one minutes. The reproduction covers a circular region of 1° diameter, with the nova at the centre, and shows stars to about the fifteenth magnitude; the B.D. comparison stars are especially marked. The earlier plates on which a star of magnitude twelve or thirteen is shown in the nova's position were taken on July 15, 1904 (exposure 3h. 46m.) and January 9 and 11, 1894 (2h. 30m. exposure), the former with the Bruce and the latter with the 6-inch telescope. In No. 4467 of the same journal the result of a comparison of positions of this faint object and the nova is announced, and it seems reasonably certain that they are identical—that the star took part in the catastrophe producing the nova.

The identity is confirmed by Prof. Barnard, who, in No. 4468 of the *Astronomische Nachrichten*, states that he has found the image of a fourteenth-magnitude star in the place of the nova on plates taken on August 7, 1907, August 22 and 24, 1909, and October 11, 1893. On the first-named plate the position of the image agrees within 0·01s. in R.A. and 0·1″ in dec., with the nova's position as determined with the 40-inch micrometer. In the 40-inch telescope the nova has two distinct and sharp foci, such as were also exhibited by Nova Geminorum (1903), the one being 8 mm. further from the object-glass than the other. Prof. Barnard has never noted this peculiarity in other stars, and ascribes it to the great brilliance of the crimson $H\alpha$ line of hydrogen, as shown on the Yerkes spectrograms.

For January 10 and 16 Prof. Millosevich gives the magnitude of the nova as 7·4 and 7·7 respectively.

Dr. Münch obtained a spectrogram with a 15-cm. objective prism used with the Zeiss triplet of the Potsdam Observatory on January 6 and 7, and the same prism was used, by Dr. Eberhard, in connection with the 30-cm. reflector on January 8. The plates show a continuous spectrum crossed by a number of bright lines. The hydrogen lines $H\alpha$–$H\eta$ are bright and very broad, and there is a very bright band at λ 4654. A broad absorption band appears on the more refrangible side of $H\gamma$, a bright emission line is seen at λ 4056, and near it, at λ 4045, there is a distinct absorption line; the K line is much fainter than would be expected from the brightness of the emission lines.

A plate taken by Prof. Hertzsprung on May 22, 1910, shows no trace of the nova, which was then certainly fainter than the eleventh magnitude.

M. Felix de Roy, Antwerp, found the magnitude of the nova on January 7 to be 7·8, and the colour was about 6° on Osthoff's scale. A telegram from Herr Mewes, Breslau, states that the nova was exceedingly red on January 14.

ABSORBING MATTER IN SPACE.—In No. 5 of the Transvaal Observatory Circulars Mr. Innes discusses the blank region of the sky around the star S. Corona Aust., and suggests that the apparent vacuity may be the result of the interposition of an absorbing medium which cuts off the light of the stars behind it. Messrs. Innes and Worssell find that in one part of the region the field of the 9-inch refractor (25′) includes no star of any magnitude. The latter also considers that he is able to detect a distinct difference in tint on passing the border of the blank and starry parts of the sky; the region is probably unique. Some of the stars appear to be surrounded by nebulous matter, but the small dark patches—seen on a photograph reproduced on Plate xxii.—are the most remarkable objects. Mr. Innes suggests that all the phenomena could be best explained by supposing that irregular sheafs of gas, some of which are dark and opaque, others slightly luminous at their extremities, cover the region. Where this gas is impenetrable no stars are seen; rifts in it allow other stars to appear; and where it is slightly luminous the stars behind it appear with circumjacent nebulosities.

In 1899–1901 the tenth-magnitude star Cor.D.M. $-36°$ 13208 was recorded by Mr. Innes as "not seen," but Mr. Worssell found it visible—and probably variable—in 1909–10, its magnitude ranging from 11·0 (1909 July 21) to 12·2 (1909 September 5). This star lies on the border of the abnormally tinted patch of the sky, and it is suggested that its disappearance in 1899–1901 may have been due to a slight extension of the obscuring medium, which is now retreating.

PHOTOGRAPHIC DETERMINATIONS OF STELLAR PARALLAX.—To No. 5, vol. xxxii., of the *Astrophysical Journal* Prof. F. Schlesinger contributes the first part of a paper on the photographic determinations of stellar parallax made with the Yerkes refractor. Previous parallax determinations have usually been made with short-focus instruments, and it occurred to Prof. Schlesinger, in 1902, that the errors of observation might be greatly reduced if much greater focal lengths were employed; the cooperation of the Yerkes authorities and the Carnegie Institution rendered this possible, and 327 plates, relating to twenty-five different regions, were secured, and have been reduced for the purposes of the present papers.

In this first paper Dr. Schlesinger describes in detail the apparatus and methods employed in securing the photographs. The question of using screens, for the sharpening of the stellar images, was considered, but it was decided not to use them, as difficulties might be introduced; also, it was found that, with the 40-inch objective used with Cramer Instantaneous Isochromatic plates, they were really unnecessary. A special movable plate-carrier, adjustable in two directions by means of screws, was employed, and the coincidence of the optical axis and the geometrical centre of the plate was investigated; it was found that they were separated on the plate by about 8 cm. (about fourteen minutes of arc), but the final effect was negligible, and, as the radical correction of the tilt would have interfered with other instruments used with the 40-inch, no attempt was made to correct it. The focussing each evening was done visually by means of an eye-piece sliding on a graduated scale. The "hour-angle error," produced by atmospheric dispersion, was eliminated, so far as possible, by choosing the hour-angle at which each plate was exposed; it was also deemed advisable to use the telescope on one side of the pillar only, in order to eliminate "optical distortion." After several experiments an ingenious "rotating disc" occulting shutter was employed for reducing the brightness of the parallax star to that of the surrounding comparison stars.

Many other interesting points are discussed by Dr. Schlesinger, but space does not permit of their being mentioned here. It may, however, be added that the scale of the plates is such that 1 mm. corresponds to 10·6″, and that 20 cm. × 25 cm. plates were used.

LINES IN THE SPECTRA OF NEBULÆ.—No. 183 of the Lick Observatory Bulletins contains a list of nebula lines discovered photographically by Dr. W. H. Wright. In the great nebula of Orion he finds lines at λ 3734 (faint), λ 3722 (v. faint), λ 3712 (v.v. faint), and λ 3704 (v. faint), all of which he ascribes to hydrogen; another line is suspected at λ 4137.

In N.G.C.7027 lines were found at λ 6301, λ 6548, and λ 6583, the latter two making a conspicuous triplet with $H\alpha$, which is very bright in all the nebulæ that have been observed.

UTILISATION OF THE SUN'S HEAT.—In the January number of *L'Astronomie*—to which title the *Bulletin de la Société astronomique de France* has reverted—Prof. Ceraski describes and illustrates a very simple thermo-electric pile which he made and which gives sufficient current to ring an electric bell whenever the sun shines. He also suggests, hesitatingly, that if made up in sufficient numbers and placed in suitable localities, batteries of such piles might be employed in utilising the solar radiations.

PROPOSED CALENDAR REFORM.

PROPOSALS for reformation of the calendar have been somewhat numerous of late years, and few of the proposers appear to have a full sense of how much trouble and inconvenience any alteration would cause, and, of course, the more radical the change is the greater this would be. Mr. T. C. Chamberlin, indeed, who puts forth another scheme in the number of *Science* for November 25, 1910, admits that it is important that if any alteration is adopted, its advantages should be so great and so unique that no further modification of it would ever appear desirable.

Now all the alterations lately proposed, including the one before us, are of a far more drastic kind than the Julian and Gregorian reforms, which only aimed at securing that the monthly and other dates in the calendar should correspond to the season of the year, the whole length of the calendar year being of the same length as a tropical year. Even in the time of Julius Cæsar it was known that the length of the latter was a few minutes less than 365¼ days. Following the practice of the old Egyptians (and guided partly by the advice of Sosigenes), when he made the Roman calendar wholly solar, he probably thought that it would be better, because simpler, to take the length of the year as 365¼ days, and that this would secure the correspondence with the seasons for a sufficiently long period. As time went on, of course, the difference between this and the true length became more accurately known.

The ecclesiastical authorities, in arranging the cycles for the observance of Easter, considered it essential that, though that feast was movable on account of its being taken as dependent on the Jewish Passover, which was regulated by the moon, yet it was necessary to take the moon the full of which followed the vernal equinox, and to give that equinox the date which it had (or was supposed to have) at the time of the first great Council of the Church, that of Nicæa. To do this it was necessary, not only to alter in future the length of the calendar year, but to drop the days, then ten in number, by which the date of the equinox had changed since the time of the Council.

The Gregorian alteration, then, was introduced in 1582; but the Reformation of the Church, which had then been accepted in many countries in the north of Europe, led to this change being opposed by them, though it was ultimately adopted all over western Europe, and consequently in North America.

But the changes we are now called upon to discuss are of a very different nature. Most of the proposers seem to think there would be very special advantage in making artificial arrangements by which the days of the week should correspond to those of the month, which, of course, could only be effected by making every month 28 days (or 4 weeks) in length. Some would increase the number of months in each year to 13, and as $13 \times 28 = 364$, suggest that the correspondence might be maintained by treating one day as a *dies non*, which would have to be made two in leap-years. But it would not be possible to treat a day as *dies non* in any complete sense. It could, of course, easily be made a holiday, but even in holidays all must do something, and many a great deal.

The peculiarity of Mr. Chamberlin's plan seems to be to retain our 12 months, but at the end of each quarter, or period of three months, to insert a week with a special designation, the thirteenth week of the year to be called Easter week, the twenty-sixth Julian week, the thirty-ninth Gregorian week, and the fifty-second Christmas week. The idea seems to be that a week is needed at the end of each quarter for arranging accounts and other matters.

Having set forth the salient points in this fresh attempt at symmetry in the calendar, we leave it to our readers to form their opinion about whether changes of this drastic nature would procure advantages comparable with the trouble caused. Many, no doubt, will be reminded of the famous interrogatory of Lord Melbourne.

The same remark, in the writer's opinion, may be made of another proposal by M. Grosclaude, of Geneva, for which the approval of a congress at Brussels is claimed. According to this, the year would consist of four quarters, each containing thirteen weeks; but while the first two months of each quarter would have only thirty days, the third would have thirty-one. This would give the year 364 days; the remaining day (two, of course, in leap-year) would be made up as in Mr. Chamberlin's plan.

W. T. L.