

and Dr. G. C. Simpson for Africa, Australia, and the ocean generally.

The Conference was unable to solve the problem submitted to it by the Commission for the Upper Air regarding the international publication of upper-air data. That these data should be collected and published in a uniform manner is highly desirable, but all the efforts of Sir Napier Shaw, the president of the Commission, to find a possible way of doing so have been unavailing. Such an undertaking would be expensive and would require financial aid from all countries concerned. In present circumstances it is not surprising that such aid is not forthcoming, and all the Conference could do was to make suggestions for meeting temporarily the pressing need for the rapid circulation of results obtained by means of sounding balloons. The data obtained by the use of aeroplanes and pilot balloons are too numerous to be handled internationally at present, and the Conference therefore recommended that each country should publish its own data.

Many resolutions dealing with agricultural meteorology, terrestrial magnetism, atmospheric electricity, solar radiation, and the upper atmosphere were adopted, but space does not allow of further details here.

One of the most important questions dealt with by the Conference was its relationship to the International Union of Geodesy and Geophysics. The great growth of the official weather services of all civilised countries has provided so many questions of administration and organisation for international consideration, that this side of the activities of the International Meteorological Organisation has swamped the scientific side. At recent meetings of the Conference and Committee there has been no time for scientific discussion, and therefore little to attract the members of the Organisation other than those connected with the great official meteorological services. A resolution was therefore considered to alter the rules in such a way as to limit membership of the Conference to directors of meteorological services. There was practically no opposition, and the rule governing the membership of the Conference now reads as follows:—

“The Officers of the Committee shall invite to the Conference all heads of Réseaux of stations in each country which are official (d'état) and independent of one another.”

It was generally understood that this would remove from the work of the Organisation all questions of pure science, and that the science of meteorology would be considered only in so far as it is applied to the needs of the meteorological services. Practically, this is no change in the work of the Organisation, but it makes a clear distinction between the sphere of the International Union of Geodesy and Geophysics and the sphere of the International Meteorological Organisation. There should now be no material overlap between the work of the Union, which considers meteorology from the scientific side, and the work of the Organisation, which “studies only those questions which are of interest to all national meteorological services and which necessitate the utilisation of their own network of stations.”

At the last meeting of the Conference, when the new International Meteorological Committee had been elected and Sir Napier Shaw was about to terminate his long connexion with international meteorology, Col. Delcambre, the head of the French Meteorological Office, rose and in a short eloquent speech expressed the regard every member of the Conference felt for Sir Napier Shaw and the debt which meteorology owed to him. He then proposed that Sir Napier should be elected an honorary member of the International Meteorological Committee, an honour never before bestowed. The proposal was accepted with prolonged applause and much feeling, for all felt that this was a happy way of marking their appreciation of the great work done by Sir Napier Shaw for international meteorology.

The newly elected Committee met the next day and appointed Prof. van Everdingen president, and Dr. Hesselberg secretary. The office of vice-president was left vacant for the present.

The general feeling at the end of the meetings, frequently expressed, was that good work had been done and much progress made. Good feeling between members from all countries was very marked throughout.

### The Emerald Table.

By E. J. HOLMYARD.

ONE of the most famous of alchemical tracts is the Emerald Table (“Tabula smaragdina”), ascribed to the almost mythical “founder of chemistry,” Hermes Trismegistos. Not merely is it regarded as a masterpiece by the medieval alchemists themselves, but later historians of chemistry have written innumerable articles in a vain attempt to solve its perennial mystery. The Latin text of the Tabula has been printed so many times that it is unnecessary to reproduce it here; it may be seen in Kopp’s “Beitr. zur Gesch. der Chemie,” p. 377, while an English translation is given by Thomson in his “History of Chemistry,” p. 10.

The problems presented by the Tabula are shortly as follows: (1) In what language was it originally written? (2) What is its age? (3) Has it anything whatever to do with alchemy? The third of these problems need not be discussed in this place: it is sufficient to remark that it has always been considered alchemical in nature, and in that judgment we may reasonably acquiesce.

The question of the age of the work needs a fuller treatment. It was first printed at Nuremberg in

1541, under the title “Hermetis Trismegisti Tabula smaragdina, in ejus manibus in sepulcro reperta, cum commentatione Hortulani,” but according to Kircher (“Oedipus Aegyptiacus,” 1653, II. ii. p. 428) it is mentioned by Albertus Magnus in his “Liber de secretis chymicis,” which is, however, probably spurious. Kriegsmann (“Hermetis Trismegisti . . . Tabula smaragdina,” 1657) maintained that the work was originally written in the Phoenician language, and says that, according to some, the Emerald Table was taken by a woman called Zara from the hands of the dead body of Hermes in a cave near Hebron. Other authors inform us that Alexander the Great, on one of his journeys, discovered the sepulchre of Hermes and in it the tract inscribed upon a table of emerald. These obviously legendary accounts led many historians of chemistry to doubt the great age of the Tabula, and Thomson (*op. cit.* p. 13) says that “it bears all the marks of a forgery of the fifteenth century.” Kopp, however, showed that it was well known to European alchemists in the middle of the thirteenth century, and that it was mentioned by Albertus Magnus (1193–1282) in a work which is

undoubtedly authentic, namely, the "De rebus metallicis et mineralibus" (lib. 1, tract. 1, cap. 3). The commentary on the Tabula by Hortulanus, to which reference has already been made, might be used to show an even greater antiquity, if Hortulanus were safely to be identified with John Garland (1202-1252), but this identity is open to grave doubt.

The last word on the subject was that of Prof. E. O. von Lippmann, in his admirable book "Die Entstehung und Ausbreitung der Alchemie" (Berlin, 1919, p. 58): "Ein griechisches Original der 'Tabula smaragdina' ist nicht bekannt, und da die syrischen und arabischen Chemiker ihrer überhaupt keine Erwähnung tun, so bestehen berechtigte Zweifel an ihrem vorgeblichen Alter; so alt wie der gesamte zugehörige Litteraturkreis könnte sie aber dem soeben Ausgeführten zufolge immerhin sein, und die Anführung des Hermes Trismegistos, sowie die Herübernahme des im Lateinischen ganz ungebräuchlichen Wortes *telesmus* (τελεσμός) lassen eine Übersetzung aus dem Griechischen mindestens als möglich erscheinen." In short, although the earliest definite mention of the Tabula is that made by Albertus Magnus, there is a possibility that the claim of the alchemists, namely, that it was translated from the Greek, was well founded.

The following observations, therefore, would appear to be of considerable interest, as throwing further light upon both the age of the Tabula and the language in which it was written. The celebrated Jābir ibn Ḥayyān, who flourished in the last half of the eighth century A.D., wrote a very large number of books on alchemy, a partial list of which is given by Al-Nadīm in his encyclopædia, the "Kitāb al-Fihrist" (tenth century A.D.). This list was compiled partly from Jābir's own catalogue of his writings, and there seems to be no doubt of its authenticity, especially as about fifty of the books mentioned are still extant. The first book on the list is one entitled "Kitāb Ustūqus al-Uss al-Awwal," a title which Berthelot ("La chimie au moyen âge," iii. 32) translates "Le livre d'Estaqès, le premier myrte." This mysterious translation is explained by the fact that apparently Berthelot's translator did not know the meaning of the word *Ustūqus* and mis-read *As* (myrtle) for *Uss* (base or foundation). *Ustūqus* is, I believe, an Arabic transliteration of the Greek *ἑσθηκός*, which is used by Aristotle in the sense of "firm" or "solid," and was extended in meaning to include the basis of anything, and thus, for example, the "four elements" as the basis of all things.

The "Kitāb Ustūqus al-Uss al-Awwal" (al-Awwal = the first) is followed by a second (al-Thānī) and a third (al-Thālith), and although no MSS. of these works are known in Europe, there are, I believe, some in India, where in 1891 a lithographed edition was published. The copy I have used was kindly lent me by Mr. A. G. Ellis of the British Museum. Now, in the second book of the *Ustūqus* (p. 41 of the lithographed edition) occurs the passage: "Balīnās mentions the engraving on the table in the hand of Hermes, which says:

'Truth! Certainty! That in which there is no doubt!

'That which is above is from that which is below, and that which is below is from that which is above, working the miracles of one [thing].

'As all things were from One.

'Its father is the Sun and its mother the Moon.

'The Earth carried it in her belly, and the Wind nourished it in her belly, as Earth which shall become Fire.

'Feed the Earth from that which is subtle, with the greatest power.

'It ascends from the earth to the heaven and becomes ruler over that which is above and that which is below.'

"And I have already explained the meaning of the whole of this in two of these books of mine."

Although the Arabic text of the Table is obviously corrupt, and the translation of it here given therefore uncertain in one or two minor points, there can be no doubt that a version in Greek was known to Jābir, since the correspondence of the above with the Latin text—the appropriate portions of which are appended—is very close:

"1. Verum sine mendacio certum et verissimum.

"2. Quod est inferius est sicut quod est superius, et quod est superius est sicut quod est inferius, ad perpetranda miracula rei unius.

"3. Et sicut omnes res fuerunt ab uno meditatione unius, sic omnes res natae fuerunt ab hac una re adaptatione.

"4. Pater ejus est Sol, mater ejus Luna, portavit illud ventus in ventre suo, nutrix ejus terra est.

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"7. Separabis terram ab igne, subtile a spisso, suaviter magno cum ingenio.

"8. Ascendit a terra in coelum, iterumque descendit in terram, et recipit vim superiorum et inferiorum."

The Balīnās mentioned by Jābir is Apollonius of Tyana, who was born a few years before the Christian era, and acquired a great reputation in the East as a wonder-worker and as a master of the talismanic art.

It seems, therefore, that we must antedate the "Tabula smaragdina" by four hundred years at least, and probably by twelve hundred; its existence in a Greek form is rendered in the highest degree probable, and it must be acknowledged that in the Tabula we have one of the oldest alchemical fragments known.

## University and Educational Intelligence.

CAMBRIDGE.—The vice-chancellor, Dr. E. C. Pearce, in the course of his address on the opening of the new academic year on October 1, said that the University Grants Committee had informed him that from the academic year now opening the Government proposes to make an additional annual grant of 30,000*l.* to meet the needs of the University for superannuation, stipends, maintenance of the Library, extension of extra-mural work, and the women's colleges; in addition a non-recurrent grant, not exceeding 35,000*l.*, will be payable in respect of superannuation arrears.

GLASGOW.—Dr. J. R. Currie, professor of preventive medicine in Queen's University, Kingston, Ontario, has been elected to the newly established Henry Mechan chair of public health. Dr. Currie during the War was specialist sanitary officer at Toronto and Dunkirk, and was Medical Officer of the Scottish Board of Health 1919-1922. His work on the "Mustering of the Medical Service in Scotland," published last year, gives a stirring account of the efforts made in Scotland to keep up the supply of medical officers for the Army and Navy, and to organise the remainder for civil needs. Dr. Currie was secretary of the Emergency Medical Committee.

ST. ANDREWS.—Dr. Adam Patrick has been chosen by the University Court to succeed Prof. Stalker in the chair of medicine, and the directors of the Royal Infirmary, Dundee, have appointed him one of their physicians. Dr. Patrick is a graduate in arts with honours in classics and M.D. with honours of the