

- Jahrbüch der K. K. Central-Anstalt für Meteorologie und Erdmagnetismus. Von Karl Kreil. III. Bd. 1851. 4to.—  
*From the Academy.*
- Bulletin der Königl. Akademie der Wissenschaften (München). Nos. 1–52. 4to.—*From the Academy.*
- Compte rendu Annuel, par le Directeur de l'Observatoire Physique Central, A. T. Kupffer. 1853. 4to.—*From the Editor.*
- Della vita e delle opere di Guido Bonatti, Astrologo ed Astronomo del secolo decimoterzo notizie raccolte da B. Boncompagni. 8vo.—*From the Author.*
- Annuaire de l'Académie Royale des Sciences, &c. de Belgique. 1854–55. 12mo.
- Académie Royale de Belgique, Bibliographie Académique. 1854. 12mo.
- Annuaire de l'Observatoire Royal de Bruxelles. 1854–55. 12mo.
- Almanach Seculaire de l'Observatoire R. de Bruxelles. 1854. 12mo.—*From the Academy.*

*Monday, 7th January 1856.*

DR CHRISTISON, Vice-President, in the Chair.

Professor Christison, in delivering the Keith Medal to Dr Anderson of Glasgow, made the following remarks:—

Dr Anderson—It is a peculiar pleasure to me to be the organ of the Society this evening for presenting to you this token of the approbation of this Society and its Council.

As there must be many now present who are unacquainted with the origin, conditions, and mode of adjudication of the Keith Prize, I hope that others will bear with me for a moment till I state these very briefly. The prize was founded by the late Sir Alexander Keith of Dunottar and Ravelston, to be given to the author of the best paper read in this Society during each successive biennial period. The Council were appointed to administer the fund, and to adjudicate the prize. The adjudication is determined by advice of a committee of the Council specially nominated for the purpose. Having been a member of the Council almost since the foundation of the prize, and repeatedly a member of the Prize Committee, I can testify to the exceeding care, and anxiety, and impartial disposition of the Com-

mittee and Council on all occasions. The best proof, perhaps, to this effect is that their award, so far as I am aware, has never been subjected to challenge in the public prints; nor have I ever heard it criticised even in private society. A still more satisfactory proof, as some may think, is the eminence of the men to whom the prize has hitherto been awarded. The first was awarded in 1828 to Sir David Brewster; the next to Mr Graham, now Master of the Mint; Sir David Brewster then received it a second time; our much esteemed secretary, Professor Forbes, has been twice similarly honoured; another was awarded to Mr Scott Russell for his researches on the "Wave-theory;" another to Mr Shaw for his experiments on the development and growth of the salmon, which have yielded since most important practical results; another to our revered president—whose duty I am now, in his unavoidable absence, inadequately discharging—for his laborious and munificent "Magnetical Observations;" and the last awards were to Professor Kelland and Mr Macquorn Rankine for elaborate and important mathematical investigations. I do not state these facts for the sake of taking any credit to the Council for the discharge of a duty, but in order that Dr Anderson himself, as well as his fellow-members of this Society, may duly appreciate that gentleman's honourable exertions, which have yielded results entitling him to be similarly rewarded on the present occasion, and to be associated with such predecessors.

Among the previous awards I may be permitted, I hope, to advert to certain circumstances connected with the last adjudication of the Keith Prize for a chemical paper—namely, to Mr Graham in 1834, for his admirable researches on the "Law of the Diffusion of Gases." For it was this paper, and in some measure the reading of it in this Society, which laid the foundation of his fortunes. The paper excited intense interest at the time in the Society, both among scientific members and others; and his name in consequence became well known to many. It may not perhaps be known to Mr Graham himself, but when he was a candidate for the chair of chemistry in University College, London, reference was made by the College authorities to several Fellows of this Society; and I have reason to know that the unanimous opinion, greatly deduced from his paper, and expressed in reply to these inquiries, had much to do with his appointment to succeed the late

Dr Turner. The present is only the second occasion, and after an interval of twenty-one years, that the prize has been assigned for a chemical paper. I do not know what the chemists have been about in the interval, but it is to be hoped that they may now be stimulated by Dr Anderson's successful example.

It is usual for one in my present position to give some account of the researches for which the prize has been adjudicated by the Council. This, however, I will, I daresay, be excused for not attempting. The papers—for they are two in number—are on “the Products of the Destructive Distillation of Organic Substances,” and on “the Crystalline Bodies obtained from Opium.” I find it impossible to give an adequate analysis of these papers which would not be too tedious for delivery now. In fact, they are scarcely capable of abbreviation, and must be perused in their entire state, in order to be followed. In the course of his experiments on both subjects, Dr Anderson has examined a great many bodies previously known, and discovered others of great scientific interest, and ascertained the composition of all, notwithstanding that they are all of great complexity. I must be satisfied with merely informing that great proportion of his fellow-members who may find it difficult to follow his elaborate researches, that they belong to the most recondite and difficult department of chemical analysis. It has happened that, with only one or two exceptions, the Keith Prize has been assigned to authors who have not only written each a paper of high merit, but have likewise contributed many others of value to our proceedings. So it is in the present instance. Dr Anderson, when a very young chemist, communicated to the Royal Society his first paper in 1842, only one year after his graduation, on the analysis of two zeolitic minerals; and we have been favoured by him with many other excellent researches since. But his last are the most elaborate and productive.

I have said that both topics of these papers belong to the most recondite branch of chemical analysis. There are not wanting people who regard such difficult inquiries slightingly, because they do not lead to any apparent practical results of importance. You will hear such recondite researches characterized as *difficiles nugæ*, and very lightly esteemed accordingly. But in these days no one who respects himself will fall into so gross an error. Dr Anderson's researches are all concerned with great che-

mical laws, and bodies developed in consequence of the existence of them. These laws exist, because they were established by Providence; and we may depend upon it that they were not established without a purpose, and that a beneficent one. Permit me to give a proof of this. The great discovery of the existence of the vegetable alkaloids, commenced nearly forty years ago, belonged in its day to one of the most abstruse departments of chemical analysis. There are others besides myself in this room who may remember that for some years afterwards the successive discovery of these bodies was lightly spoken of as *difficiles nugæ*—or laborious trifling. But a different view came to be taken of such inquiries, when it appeared that all the vegetable alkaloids concentrate in themselves the poisonous and medicinal properties of the vegetables which yield them. Among the truly practical and beneficent results that have ensued, let me mention one great fact—namely, that with one of these alkaloids, intermittent fever, one of the most common diseases of hot and even of some temperate climates, may be cured with almost as great certainty as we can appease hunger with bread or with meat. I shall detain you by mentioning only one other illustration—the newest of all. In the course of a very elaborate inquiry in a far-removed corner of organic chemistry, a body was discovered which is known to chemists by the scientific name of terchloride of formyl. This was in 1832. For many years it belonged to the *difficiles nugæ*; no one even saw it, except occasionally some chemist more curious than his fellows in general. I venture to say that many here present do not know the name, and may think it requires the alchemy of Dr Anderson, and such as he, to understand it. At last, after the lapse of fifteen years, this was discovered to be the powerful agent which has since been more familiarly known by its oldest name chloroform, one of the kindest gifts of Providence to man. Let all beware, then, of speaking lightly of the elaborate and apparently unproductive chemical researches of the present day. Who knows but that among the curious new bodies discovered by Dr Anderson, there may yet be found another gift not inferior to that of chloroform, or that of quina?

I set out with observing, Dr Anderson, that it was a peculiar pleasure to me to be honoured with the duty of presenting this prize. It would be a great pleasure in any circumstances, but it is peculiarly so when I have to convey this impartial mark of our

Society's respect to one who, once my pupil, and afterwards my friend, is now also my professorial brother. It is well known to your early friends that it would have been easy for you, under the auspices of your late father, to have soon attained a competence and independence as a medical practitioner ; but you preferred the more thorny path of science. I happen to know that your choice gave some uneasiness and anxiety to your parent, when he reflected how few,—alas ! for the scientific welfare of this country,—how very few prizes in chemical science are held out to its votaries in Britain. But he was reassured by the assurance of his friends that the spark so clearly visible would soon be blown into a flame ; and, accordingly, he lived long enough to see you received by universal consent among the chemists of Europe, and rewarded by the second—if, indeed, it be only the second—chemical office, in point of honour in Scotland.

I must not conclude without mentioning that the value of the Keith Prize is not to be measured by this medal merely. Apart from the honour, the prize varies in value from £50 to £65, and the latter sum is its amount on the present occasion. It is, therefore, in all respects, an object well worthy of competition among scientific men.

The following Communications were then read :—

1. Geometry, a science purely experimental. By Edward Sang.

After remarking that the perfect strictness of the demonstrations in Geometry is generally admitted, the author of the paper cited the almost universal belief in the soundness of Euclid's reasoning as a notable example of wide-spread credulity. He then enunciated the proposition that our knowledge of the truths of geometry is altogether derived from experience.

Taking the first of Euclid's problems, "To construct an equilateral trigon," he showed that the facts that the circles intersect at all, and that they have only one intersection on each side of the base, are taken for granted, and he contrasted the looseness of this procedure with the hypercritical precision of the following problem "to cut from the greater of two lines a part equal to the less."