

THE CARNEGIE TRUST.¹

THE Carnegie Trust for the Universities of Scotland has steadily pursued the policy of making quinquennial distributions of the funds at its disposal; and the present year finds the third of these schemes in operation. The total sum to be expended during the current five years was 203,250*l.* Of this, 21,250*l.* is to be applied towards providing books, etc., for the libraries of the universities; 160,750*l.* goes to supply new buildings and permanent equipment; while 21,250*l.* is to be spent on endowing lectureships and upon other general purposes.

With regard to that portion of the scheme which concerns itself with assisting students by paying their class fees, a sum of 41,789*l.* was paid on behalf of 3,900 beneficiaries in 1913-14. It is gratifying to note that in the same period 605*l.* has been repaid to the trustees by beneficiaries who had been assisted under the scheme.

The expenditure on research for the current twelve months is divided as usual under the heads of scholarships, fellowships, and grants, with the additional expenditure necessary to support the laboratory of the Royal College of Physicians in Edinburgh. 1392*l.* has been spent upon the laboratory, while the fellowships, etc., have necessitated an outlay of 7652*l.*

These sums have not been expended without good return, as the present report shows. Special mention is made of the long and conspicuously successful investigations of Dr. Margaret B. Moir on the effect of temperature upon the magnetic properties of steel; while the executive committee point to the work of Dr. Dougall on elasticity as a proof that their fellows do not relinquish research with the termination of their fellowships, but continue to bring forward investigations of first-class importance.

The scholars in the branches of chemistry and physics have published no fewer than thirteen papers during the session, and much unpublished work is still in process of completion. The research grants have aided in the production of twelve papers during the present year; and in this connection stress is laid upon the collaboration between the permanent staffs of the universities and other beneficiaries of the trust, the cases of Profs. G. G. Henderson, J. C. Irvine, and Dr. T. S. Patterson being singled out as examples of success in this respect.

In more than one direction, the war has had an effect upon the progress of the research scheme. Naturally, as far as materials go, the chemical field is the one most affected, owing to the difficulty of obtaining substances for some classes of work; but all branches have suffered owing to the enlistment of fellows and scholars in the army. No fewer than nine of the fellows and scholars have interrupted their scientific careers for this object; and it is satisfactory to learn that their positions are being kept open for them should they wish to resume research work

after the war. A similar state of affairs is found in the Royal College of Physicians' laboratory, from which no fewer than nine of the workers are absent on military duty; so that this institution has been heavily handicapped during the current year.

Bearing these factors in mind, the results obtained in the operation of the trustees' scheme during the period covered by the report cannot be said to fall below the high standard attained in previous years; and it must also be recalled that many of the beneficiaries of the trust have resigned their fellowships or scholarships in order to take up permanent positions either in the universities or in other lines of professional work.

During the academic year 1914-15, twenty fellows and forty-seven scholars have been at work, while grants have been given to seventy-eight applicants. The investigations of these beneficiaries are extended over so wide a field of knowledge that it is impossible even to mention the branches of science, medicine, history, and languages in which work is being carried out; but a perusal of the report leaves the impression that the operations of the trust are steadily opening out wider and wider fields. The success of the trust's methods has never been in doubt, and the interest of observers becomes concentrated upon the developments which seem likely to flow from this vast machinery for enabling competent investigators to acquire a grasp of the methods of research, and to put the knowledge thus obtained into practice on a bigger scale than would otherwise be possible to them.

INEXACT ANALOGIES IN BIOLOGY.¹

THE philosopher of the forum is notorious for the looseness of his analogical arguments from biology, and biologists themselves deserve castigation for their lax terminology. Even a Galton can write: "Parents are very indirectly and only partially related to their own children." Every word has its halo, and may be regarded according to one's point of view as either a potted poem or a tabloid theory. When the theory has been overturned, the use of the word in serious argument is dangerous. Then comes the critic to set us straight again, and so here is Dr. Johannsen putting such blessed words as "evolution," "affinity," "tradition," and "inheritance" in their proper places. So far as he condemns the use of inexact analogy, especially as a method of proof, we shall all agree with him—at least theoretically. But an analogy, strict in its application, may be falsified by its premises. Many such are rejected by Dr. Johannsen as incorrect presentations of the facts of organic life and history. But here he often seems a little too certain that his interpretation of nature is the only right one. Belonging to the strictest sect of the Mendelians, he believes that, though the organism may respond variously to external

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¹ Falske Analogier med Henblik paa Lighed, Slaegtskab, Arv, Tradition og Udvikling. By W. Johannsen. 8vo, pp. 114. (København, 1914).

conditions, the constitution of the germ is unaffected thereby, and that any change in it is necessarily discontinuous. Hence, though individual growth is inevitably continuous, organic evolution must be discontinuous; and any analogy between race-history and individual history must be false. The idea that the latter recapitulates the former "cannot be applied to concrete instances."

That likeness does not necessarily imply relationship is true enough; but there is more than "likeness" when we find the last of an ascending series of fossils repeating in its life-history the adult stages of the successive species immediately preceding it, all those stages having been linked by gentle gradations. The semblance of continuous evolution may conceivably be explained by an appeal to the mongrel (heterozygote) constitution of the germ, and by allowing wide limits of modification to the soma, in successive species. But why is the trend of germinal saltation so often the same as that of somatic modification, and why should individual growth repeat and follow this trend? These are questions not of analogy, but of fact, and are not to be dismissed with a bare denial.

Biologists may differ on these matters, but all might read with pleasure Dr. Johannsen's criticism of Prof. Bergson's "Élan vital."

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PROF. OTTO N. WITT.

BY the sudden death, through heart-failure, on March 23, of Otto Nikolaus Witt, Geheimer Regierungsrat and professor in the Technical High School of Charlottenburg, at the comparatively early age of sixty-three, and in the full maturity of his intellectual power, Germany loses one of the most distinguished of her teachers of chemical technology, and one of the most successful of her pioneers in the application of organic chemistry to industrial pursuits. Of Russian extraction, Witt had intimate associations with all the countries now warring against Germany. Like Hofmann, Griess, Caro, Martius, and others who could be named—the founders of Germany's unrivalled supremacy in the manufacture of the so-called coal-tar dyes—upwards of thirty years ago Witt spent some time in England as a member of the now defunct firm of Williams, Thomas and Dyer, then engaged in the industrial production of this class of colouring matters. He took kindly to English life, moved freely in scientific and literary circles in London, joined the Savile Club, which had then its home in Savile Row, had his boat on the river, and enjoyed to the full the hospitality which his many social gifts, the range of his knowledge, his admirable conversational powers and charm of manner readily secured for him.

Witt spoke and wrote our language with ease and fluency. *Habitué*s of the Royal Institution well remember the brilliant Friday evening discourse he gave on the development of the

synthetic indigo industry, illustrated with a wealth of material and a mass of detail which his close connection with the great firms which have combined to exploit that industry had enabled him to accumulate. Among the many fruits of his scientific activity in England at that time may be mentioned his paper in collaboration with Thomas, on the induline group, published in the Transactions of the Chemical Society for 1883. At another period of his career he was associated with Nöltling and Grandmougin, at Mulhouse, in developing the chemistry of the indazole derivatives, and his Alsatian connections brought him into contact with the leading manufacturers of synthetic colouring matters in France, and he learned to know Paris and to appreciate its scientific interests as fully as he knew and valued those of London.

The most fruitful period of Witt's scientific activity was comprised between the years 1876 and 1892. During the earlier years of his connection with the Charlottenburg institution, he was hampered by the want of adequate laboratory accommodation, and in spite of his acknowledged position as an authority on that particular section of applied organic chemistry with which his name and fame are indissolubly associated, and notwithstanding his generally recognised powers as a teacher, his success in creating a school fell short of his hopes, and neither the number of his students nor the character of their output, as determined by the quality and number of their communications to chemical literature, were commensurate with his aspirations.

Witt was one of the earliest to attempt to explain the properties and colour of dyes in terms of chemical constitution, and his memoir of 1876, published in the *Berichte* of the German Chemical Society, attracted considerable attention by the originality and boldness of its views, and the ingenuity with which they were supported. The terms "chromophor" and "chromogen" which he introduced in order to denote the special groups and molecules which he conceived to be concerned with the production of colour are still current in the literature. Although Witt's hypotheses have not wholly stood the test of time, the paper will always have its place in the history of the subject. It is at least noteworthy as the production of a young man of twenty-four.

Witt's name is associated with the discovery of certain typical classes of synthetic dye-stuffs. His published work includes papers on the indulines and indophenols; on the nitroso-derivatives of aromatic amines, eurhodines, eurhodols, safranines, etc., and he contributed the monographs on azines, indamines and indophenols, artificial indigo and indigoid dyestuffs, and triphenylmethane colouring matters to the "Dictionary of Applied Chemistry," published by Messrs. Longmans, Green and Co. They are amongst the most valuable articles in that work, and are characterised by Witt's excellent literary qualities, his grasp of principles, his power of co-ordination, his sense of proportion, and felicity of expression—qualities