

generally nearly intermediate in character between their two parents; but in the next generation the offspring commonly revert to one or both of their grandparents, and occasionally to more remote ancestors" (vol. ii., p. 383).

The somatic cells of the hybrid, according to the theory of pangenesis, throw off gemmules carrying the character-units, and, as Darwin says, "by the same hypothesis dormant gemmules derived from both pure parent-forms are likewise present. . . ."

"Consequently," he continues, "the sexual elements of a hybrid will include both pure and hybridised gemmules; and when two hybrids pair, the combination of pure gemmules derived from the one hybrid, with the pure gemmules of the same parts derived from the other, would necessarily lead to complete reversion of characters" (*ibid.*).

Here we have as exact a presentation of the allelomorphous idea of homozygosis as could be wished. We have merely to substitute the word "factors" or "genes" for "gemmules" to have virtually a statement in the form of the Mendelian theory.

Finally, Darwin says:—

"And, lastly, hybridised gemmules derived from both parent hybrids would simply reproduce the original hybrid form" (*ibid.*).

Here is what appears to be, and substantially is on its face, a Mendelian form of explanation of recombination in heterozygosis, with this difference: According to Darwin's conception, the "gemmules," or as we should say "factors," come over, $Dr \times Dr$, from the respective parents in an already hybridised state, and give rise, simply by virtue of their all being there in a hybrid, to a complete bodily state of Dr —the hybrid condition—not, however, by means of segregation and recombination. Here is lacking, of course, the conception of separation and recombination according to the law of chance of D and r , giving $1 DD : 2 Dr : 1 rr$. Such an explanation could scarcely have been expected to be worked out short of an experiment such as Mendel's, involving actual counts. It does seem strange to us now, in view of the several times previously recurring observations by some five different breeders, including those of Goss and Knight, of the phenomenon of the appearance of different coloured peas in the same pod as the result of crossing, that this phenomenon should not have aroused curiosity and led to experiments on Darwin's part, for he refers to them all. However, in view of the fact that neither Nägeli nor Focke—the only investigators before 1900 who were acquainted with Mendel's papers at all—was particularly impressed with the importance of his experiments with peas, it is not surprising that Darwin should, among others, have failed to find the clue that Mendel did.

However, as a contribution to the development of the history of hybridisation, Darwin's application of his doctrine of pangenesis is highly interesting, showing the operation of an able mind, in the absence of adequate experimental data, in framing a conception of a theory of hybrids that comes surprisingly near being a statement of the present point of view as regards operation and, in the case of homozygosis, in regard to theory as well.

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Wild Birds and Distasteful Insect Larvæ.

DR. W. E. COLLINGE gives in NATURE of July 24 some most interesting details about the distastefulness of insects to birds. He observes that both the larva and imago of *Abraxas grossulariata* are eaten by various species. I would like to add the following observa-

tions:—During the last few years I have bred several thousand larvæ, including those of *A. grossulariata*, in order to study their genetics. Owing to the impossibility of setting all the imagines, a certain number were set free as soon as recorded. In this way I have thrown out of my window imagines of the following species:—*A. grossulariata*, *Spilosoma mendica* (larvæ and imagines), and both type and melanic forms of *Tephrosia consonaria*, *Boarmia consortaria*, and *B. abietaria*. I have noticed the following points:—(1) The birds round the house, chiefly sparrows, would eat the imagines of all five species, but *A. grossulariata* the least readily, tearing off the wings and devouring the body on the spot (it was too late in the year for them to be feeding young). (2) My larvæ of *S. mendica* were suffering from a disease (a filter-passer, I believe, for smears revealed no micro-organisms), and when an entire brood was past hope I used to throw them into the garden. Some were dead and many dying, but they were cleared away in a few minutes, in spite of their evil smell. (3) The imagines of *B. consortaria* and *B. abietaria* were eaten with the utmost avidity. No sooner had one or two insects been thrown out than a number of birds would crowd round waiting for the next, and if this were hidden in the ivy round the house they would hunt for it until it was found. On one occasion some insects were hidden in a flower-pot on the window-sill, but the birds soon found them, and would afterwards return to the edge of the pot, as if waiting for more. These birds would even carry off dry pinned insects, possibly for their nests. The fact that birds will not eat *A. grossulariata* readily, but will eat the diseased larvæ of *S. mendica*, seems to support Mr. Speyer's view, especially since the parasites mentioned do not live in the alimentary tract. For this reason they contain no proteolytic enzymes, and can therefore be of no conceivable harm to young birds.

Observations as to the extent to which birds prey upon the imagines of various species have a special interest, because those theories of mimicry which are based on natural selection demand some conscious selective agent such as birds, although there are very few actual observations to support such a conclusion. Evidence concerning European species is, of course, only of value by analogy.

H. ONSLOW.

3 Selwyn Gardens, Cambridge, August 2.

THE BRUSSELS MEETING OF THE INTERNATIONAL RESEARCH COUNCIL.

THE Inter-Allied Conference on International Organisations in Science, which met in Paris on November 26–29, 1918, adopted 2 number of resolutions for constituting such organisations for the promotion of co-operation in scientific work, and appointed an executive committee to carry them out until the scheme was sufficiently advanced for the International Council to be convened and to assume its final form as a federation of National Research Councils.

This took place at a meeting which was held in Brussels on July 18–28, where the following countries and dominions were represented by their delegates: Belgium, Canada, France, Italy, Japan, New Zealand, Poland, Rumania, Serbia, the United Kingdom, and the United States of America.

On the morning of Friday, July 18, the delegates met in the Palais des Académies, where King Albert was present. M. Harmignie, the

Minister of Science and Arts, welcomed them in a short address in which he dwelt on the importance of the occasion and on the valuable results which would be obtained from international co-operation in science, and wished them success in their deliberations.

M. E. Picard, the president of the Executive Committee, was unfortunately prevented by ill-health from being present, and M. A. Lacroix presided at the meetings of the General Assembly. The first business was the consideration of the statutes of the International Research Council which had been provisionally agreed upon in Paris, and now came up for consideration in the final form as recommended by the Executive Committee.

The objects of the Council are therein defined to be:—

(a) To co-ordinate international efforts in the different branches of science and its applications.

(b) To initiate the formation of international associations or unions deemed to be useful to the progress of science.

(c) To direct international scientific action in subjects which do not fall within the province of any existing association.

(d) To enter, through the proper channels, into relations with the Governments of the countries adhering to the Council to recommend the study of questions falling within the competence of the Council.

The countries adhering to the Council are those already mentioned as represented by their delegates as well as Brazil, Australia, South Africa, Greece, and Portugal—that is, those of the Allied nations who were originally invited to form the International Council as possessing academies of science, and being engaged in scientific work. To these, other nations may be added at their own request or on the proposal of a country already belonging to the Council, or Union, by a three-fourths vote in favour of admission.

The work of the Council will be directed by the General Assembly, which will meet ordinarily every three years, but in the interval between its successive meetings business will be transacted by an Executive Committee of five members nominated by the General Assembly and holding office until the next meeting of the General Assembly. In the present case the Executive Committee, consisting of Prof. E. Picard, Dr. A. Schuster, Profs. Hale, Volterra, and Lecomte, has been re-elected and will consider its character and constitution and report to the next meeting of the General Assembly before its organisation is finally laid down.

The concluding meeting of the Council was held on Monday, July 28, when it was decided that all neutral nations should be invited to join the International Research Council and the International Unions created under its auspices, thus providing for the reconstitution of international scientific associations so far as is practicable at the present time.

The formation of unions for the organisation of international work and co-operation in different departments of science, which had been initiated at Paris, was carried considerably further at Brussels. In some cases unions with sections for dealing with special branches of the field covered by the union were organised. In other unions the delegates present came to the conclusion that at the present stage it was preferable to appoint committees to study the general position, and to report later to the union with a view to the formation at its next meeting of such sections as might be needed, when the representatives of the different countries would be better able to estimate their requirements.

The Astronomical Union, which was instituted in Paris, was now able to complete its organisation by approving its statutes, and by deciding upon the appointment of a number of committees for organising international co-operation in various branches of astronomical work, such an arrangement being considered better than the formation of separately organised sections. M. Baillaud was nominated president, and Prof. A. Fowler general secretary, of the union.

The Geodetic and Geophysical Union, which was also instituted at Paris in November last, includes several branches of science for which special organisations have existed for many years before the war. These have now been reconstituted as sections of the union, each with its own executive committee of international delegates. The statutes of the union, which follow generally those of the Council, were approved, and sections were formed for geodesy, seismology, meteorology, terrestrial magnetism and electricity, physical oceanography, and vulcanology. The section of geodesy takes the place of the International Geodetic Association, now non-existent, but which formerly had its bureau at Potsdam. The triennial meetings of this association, at which reports on different kinds of geodetic work were presented and new methods and plans for work discussed, were of the greatest value to geodesists, and the new section has a large field of work before it. Variation of latitude was formerly included among the subjects grouped under geodesy, but at Brussels it was agreed that it would be more conveniently dealt with by the Astronomical Union, which appointed a committee to consider and report upon this subject. Major W. Bowie, of the U.S. Coast and Geodetic Survey, was nominated president, and Col. Perrier, of the Service Géographique de l'Armée at Paris, secretary of this section.

In seismology the old pre-war association is still in being until April 1, 1920, since the countries belonging to it did not withdraw from it before the commencement of the last four-year period. Its central bureau was at Strasburg, which is now a part of French territory, and Prof. Rothé has been appointed professor of geophysics there. It was decided, therefore, that no definite action beyond the institution of a section of seismology should be taken until the

old association had ceased to exist. The proposal was made at Paris that a section of the union should deal with meteorology, and this has now been confirmed, Sir Napier Shaw being nominated president, and Dr. Marvin, of the U.S. Weather Bureau, secretary. There has been for many years an International Committee of Directors of Meteorological Services, by whom administrative and technical questions relating to their work were discussed and international co-operation in that work was arranged. There is, however, ample scope for an organisation to co-ordinate work in meteorology, and to direct international work in the subject which does not fall within the administrative requirements of the meteorological services.

International work in terrestrial magnetism has hitherto been looked after by a sub-committee appointed by the International Meteorological Committee, but there was a general agreement that this subject and the electrical phenomena of the atmosphere should be dealt with by a special section which would co-operate with that dealing with meteorology and with the Physical Union in its work. Of this new section Prof. A. Tanakadate and Dr. Bauer, of the Carnegie Institution of Washington, were appointed respectively president and secretary.

To these sections were added two new ones—that of physical oceanography, to deal with tides, currents, temperature, density, salinity, and other physical phenomena of the oceans; and that of vulcanology for the study of the chemical and physical phenomena of volcanoes. In oceanography no president was nominated, but Prof. H. Lamb was elected vice-president, and Dr. Magrini, of the Hydrographic Service of Venice, secretary. In vulcanology the president is Prof. A. Riccò, of the Etna Observatory, and Dr. Maladra is secretary.

The executive committee of each union consists of a president, the presidents of its sections as vice-presidents, and a general secretary. In the Geodetic and Geophysical Union M. C. Lallemand, director of the Service de Nivellement de France, was elected president, and Col. H. G. Lyons general secretary.

The Mathematical Union was formed with Prof. Ch. de la Vallée-Poussin, of Louvain University, as president. In this union no sections have been formed, but it was agreed that the union should meet in Strasburg next year, when the further organisation of the union might be considered.

A Chemical Union was also formed, but the representation of this subject at Brussels was not sufficient to proceed further with its organisation there. The delegates representing physical science decided to form the Physical Union, leaving its complete organisation to a later occasion. An organising committee was nominated and charged with making arrangements for the next meeting as well as for forwarding various projects of importance for the progress of physical science.

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In biology Prof. Yves Delage was elected president, and M. C. Flahault secretary. Sections were established for general biology, physiology, zoology, botany, applied biology, and medical science, but here, too, it was recognised that the arrangements made could only be provisional.

Though the practical success of the International Research Council and the unions associated with it cannot be fully demonstrated until the next meeting, when three years' work will be available for report, and there will have been time to prepare projects for international working in each group, the organisation is now established on a working basis, and the meeting at Brussels showed that there was a large amount of work to be taken up, for the organisation of which the executive committees of the unions and sections now exist. The meetings in London, Paris, and Brussels form successive stages in this important achievement, and the members of the executive committee who have guided the Research Council through the first stages of its existence may well be satisfied with the result.

The legal domicile of the International Research Council will be at Brussels, and the periodical meetings of the General Assembly will take place there. The secretariat will continue to be in London, where the Royal Society has placed a room at its disposal. Unions and sections will meet at such times and places as their general assemblies or executive committees may decide.

On the day of their arrival the delegates were received at the Hôtel de Ville by M. Adolf Max, and receptions were given by the Minister of Science and Arts on July 26, and by the Minister of Foreign Affairs on July 28, at their official residences. On July 26 M. G. Lecoq, director of the Royal Observatory, invited the delegates to visit the observatory at Uccle, where they were shown over the buildings and its ample instrumental equipment.

H. G. L.

THE BOURNEMOUTH MEETING OF THE BRITISH ASSOCIATION.

IT is now possible to give further details of the meeting of the British Association to be held at Bournemouth on September 9-13. As already stated, practically all the meetings and discussions will be held in the Municipal College. This building, it is anticipated, will provide ample accommodation for all the activities of the association, with the exception of the very large assemblies—the inaugural general meeting, the discourses, and the conversazione (or, as it is now termed, the civic reception). It will readily be seen that in this respect members will find the arrangements far more convenient than at many previous meetings, when various buildings scattered over the town have had to be utilised.

The large hall of the college will be fitted up as the reception room. Other parts of the building will be converted into section rooms, staff rooms, luncheon and tea rooms, writing and smoking rooms, telephone room, etc. Members