

though by no means exclusively attached to them, and are consequently very liable to be carried from one country to another. But it is rather startling to read in the preface,

"The number of species found within the British Isles is eighty-eight, with four varieties; of this total, fifty-one species and two varieties have been found living under glass, and have undoubtedly been introduced from other countries. A few of these aliens have, apparently, existed in this country as plant pests for more than half a century; while others have been introduced within the last fifteen years, and with the exception of a few species, have apparently come to stay, and add to the difficulties of plant-culture."

The males are small delicate insects, and the females are apterous, and are sometimes ornamented with elegant laminated appendages of wax, as in the species of *Orthezia*, which are not uncommon on grass, nettles, and other low plants. It must not be forgotten that although the Coccidæ include such destructive insects as the American blight and the San José scale, other species furnish us with some of the most useful products obtained from insects, such as cochineal, lac, &c. It remains to add that Mr. Newstead has given us a very full account of the transformations, habits, &c., of each of our British species, and that the plates are excellent.

There are few more useful, and at the same time few more injurious, families of insects than the Coccidæ, and also few which have been so much neglected by entomologists until within the last ten or fifteen years, though latterly they have been so much studied by good observers in most parts of the world that our knowledge on the subject has advanced by leaps and bounds. Thus, in 1891, only seven species of Coccidæ were recorded from Ceylon, but Mr. Green took up the study immediately afterwards, and in November, 1894, he was already able to enumerate not seven, but seventy-two distinct species which he had observed up to that date. In the preface to the present work, dated September, 1896, he says:—

"This large number will be almost doubled in the present work, . . . and when other parts of the island have been properly explored, it is probable that considerably over two hundred species will be recognised."

It is needless to say that such estimates usually prove to be very much below the mark. The three parts of Mr. Green's book already published include ninety-one species, belonging to three subfamilies out of eleven (*Conchaspinæ*, *Diaspinæ*, and *Lecaniinæ*, of which last only the genus *Lecanium* is at present monographed), and nine genera, besides preface, glossary of terms, introductory and supplementary chapters on habits, classification, remedial measures, &c. We are not told how many more parts will be required to complete the work, and it is possible that Mr. Green himself cannot at present decide, for there will no doubt be large additions required to the earlier portions. He appears to have done his work very completely and thoroughly, and the illustrations are excellent. Respecting these, Mr. Green writes:—

"The lithographic plates, reproduced from my own drawings, have been most carefully printed in colours by P. W. M. Trap, of Leiden."

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We are pleased to see that Mr. Hudson is continuing his efforts to make the small, but highly interesting, insect fauna of New Zealand more widely known, and we hope he will continue to deal with other orders in succession. As in other groups of animals, the Neuroptera exhibit the usual characteristics of the fauna, a very small total number of species, a striking absence of most of the characteristic Australian groups, and the presence of a very few remarkable species peculiar to New Zealand. Among the latter we may mention the handsome dragon fly *Uropetala Carovei* (named by Adam White after the author of the "Story Without an End"), which superficially resembles our British *Cordulegaster annulatus*, Latr., but is larger.

Mr. Hudson describes the early stages of many of the species he notices, and figures several larvæ and pupæ in addition to the perfect insects. In an appendix he discusses the food of trout in New Zealand, founded on an examination of the contents (chiefly insects) of sixty trout stomachs. On the other hand, the larvæ of some of the larger Neuroptera may (like those of *Dytiscus* among the Coleoptera) be destructive to fish. Thus we read (p. 5), "The larva of *Stenoperla prasina*, Newm., might perhaps prove destructive to very young fish."

The Mallophaga and Psocidæ are not included in the present volume, and the Embiidæ and Panorpidæ are unrepresented in New Zealand. We have thought a comparison of the number of species of the families dealt with by Mr. Hudson, found in Britain and New Zealand respectively, might be interesting:—

Families	Britain	New Zealand
Termitidæ (White Ants) ... ..	0	3
Perlidæ (Stone Flies) ... ..	24	3
Odonata (Dragon Flies) ... ..	40	10
Epheméridæ (May Flies) ... ..	37	13
Sialidæ (Alder Flies) ... ..	2	1
Hemerobiidæ (Lace-winged Flies) ...	48	8
Phryganeidæ (Caddis Flies) ... ..	136	24

W. F. K.

#### DARWINISM AND THE STATE.

*La Concurrence sociale et les Devoirs sociaux.* By J. L. de Lanessan. Pp. 308. (Paris: Félix Alcan, 1904.) Price 6 francs.

M. DE LANESSAN has added yet another to the many books that undertake to show the working of Darwinian principles among civilised races, and this, like so many other books dealing with the same subject, shows no real knowledge of Darwinism. The author is strongly anti-Darwinian, and maintains that the struggle for existence leads to degeneration in the labouring class, which finds itself over-matched in the struggle against an aristocracy or a plutocracy.

At the outset some clear definition is needed. What is meant by degeneracy? Apparently our author means the under-development of the individual through defective nourishment and unhealthy conditions generally. This is, no doubt, a great evil, but it is not racial degeneracy. Would M. de Lanessan deny that the physical strength of civilised peoples is maintained by the large amount of elimination that still goes on? (In England nearly 50 per cent. of the population die before the average age of marriage,

and so approximately that percentage is from the evolutionist's point of view, of no account.) The most thorough-going Darwinian would agree that a nation is weakened by class antagonism, just as a hive of bees would suffer if the workers were divided into two factions who were always thwarting one another. The struggle for existence often takes the form of a struggle between communities, not between individuals, and it scarcely needs to be said that one which is not distracted by disunion is stronger than one which is. Disunion within is a bad thing, but opposition from without may be a blessing. The constant presence of an enemy almost at the gates was the making of ancient Rome. M. de Lanessan owns that war, more than anything else, strengthens the bond of union among citizens and fosters the growth of patriotism. Indeed, without war national feeling would not have existed. Our author, after half admitting this, speaks of a supreme phase of evolution when there will be no distinction of races.

The second part of the book is more practical and more interesting. Anti-Darwinism disappears for a while, and we hear only of the duties of the State. Since unchecked competition, whether between classes or individuals, is disastrous, the State must limit and regulate it. The State must deal with questions of public health, inspect factories, and see that workmen are not exposed to unnecessary dangers and are compensated if injured. The State should see that distress is relieved. Old age pensions should be provided even for those who are too poor to contribute towards themselves. But saving should be encouraged in every way, though our author owns that accumulations of capital lead men to choose the wrong women as wives. The State must make every effort to prevent war between capitalists and their employés. A long chapter is devoted to the progress of the race, no distinction being drawn between evolution and progress in civilisation. Mothers and their children must be better cared for. The length of the working day must be curtailed, since this would ennoble the lives of workmen, and so improve future generations. Education must be supplied gratis by the State, and should be of a practical kind, the subjects being such as will help a boy in after life. Science, not literature, is what is wanted. Finally, morality and religion come up for discussion. The State must instil moral principles and leave religion alone. Altogether the State has a great deal of work to do.

F. W. H.

#### CHEMISTRY OF THE SUGARS.

*Die Chemie der Zuckerarten.* By Prof. E. O. von Lippmann. Dritte Auflage. Two vols. Pp. xxxiii + 2003. (Brunswick: Vieweg und Sohn, 1904.) Price 30 marks.

THE appearance of a new edition of Prof. von Lippmann's well known treatise is of importance to all interested in the chemistry of the sugars. To workers in this field the book has long been indispensable and in daily use. The author is to be congratulated on the care and accuracy with which he has compiled the third edition. Since the appearance of the previous edition, in 1895, the work has almost doubled in size, owing to

the very large amount of investigation which has been done in connection with the carbohydrates, especially on the physiological side. Two new chapters, dealing with formation in the plant and physiological behaviour of the sugars, have been appropriately introduced. The book preserves its former arrangement: under each sugar is given its occurrence, preparation, properties, estimation and a complete glossary of its derivatives, so that reference to any particular point is very easily made. Special chapters are devoted to constitution, configuration and synthesis and to the relationship between the physical constants of the various sugars. The book is clearly printed in large type and space formulæ are liberally used. The inclusion of investigations published early this year shows how completely the account has been brought up to date and reflects the greatest credit on author and printers alike.

It is easy, with the aid of such a work, to take stock of the progress made in sugar-chemistry during the last ten years, the second edition having been published shortly after Fischer's classic syntheses of the hexose sugars. To the eleven out of the possible sixteen aldohexoses, synthesised by this chemist, no new additions have been made, though the degradation methods of Wohl and Ruff have enabled us practically to complete the series of the inferior sugars—thus there are described two aldo- and one keto-trioses, four aldo- and one keto-tetroses and seven aldo- and four keto-pentoses, only one aldo-pentose, *D*-xylose, remaining to be synthesised. But our shortcomings are also painfully evident. Although the series of the monosaccharides is almost complete but little progress has been made either in characterising or in determining the structure of the disaccharides; and from the synthesis of cane-sugar by purely chemical means we are seemingly as far off as ever. One natural biose—melibiose—however, does appear to have been obtained synthetically and the most recent work points to the possibility of synthesising biose sugars by means of enzymes, a process which must be closely allied to that taking place in nature. It is in this direction, in fact, that we have grounds to hope for the next great advance in our knowledge.

The relationship between configuration and susceptibility to the action of enzymes or to alcoholic ferments affords one of the most striking chapters in physiological chemistry. Thus the only fermentable sugars contain six carbon atoms—neither more nor less. The statement that glycerose syrup was fermentable has since been withdrawn and we believe also that the supposed fermentability of mannnonose has been recognised as incorrect. Of the eleven known aldohexoses only three—glucose, mannose and galactose—and but one ketose—fructose—are fermentable. Not only do these fermentable hexoses occur naturally but three of them are so closely related that they possess a common enolic form; it is all the more remarkable that the closely related aldopentoses, arabinose and xylose, which are so abundant in nature, are not fermentable.

Regarding the work as a whole, it is beyond question that not only those interested in the carbohydrates but chemists generally owe Prof. Lippmann a great debt of gratitude for his labours.

E. F. A.