internal management of public asylums we would recommend a study of these returns, showing the different rates of remuneration in different asylums.

The "good service pay" is, in truth, a pleasant feature of the management of the Irish asylums. At p. 10 the Inspectors evince their sympathy with, and disposition to help, the staffs of public asylums in the matter of salaries, wages, and pensions, by speaking a word in their favour. The addition of £100 a year to the salary of the superintendents after eight years' good service, is a specimen of the anomalies existing in the administration of the three divisions of the United Kingdom.

Animal Intelligence. By GEORGE J. ROMANES.

This book is one of the International Scientific Series published by Kegan Paul, and Co., who deserve the thanks of all those interested in the further development of scientific education for the admirable series which they are publishing.

The present volume is certainly a great contrast to one which we reviewed some time ago, entitled "Mind in the Lower Animals," by Dr. Lindsay. The present volume is much more handy in shape than the former; the facts are more carefully selected, and are arranged in a more scientific manner. There is no bias of personal feeling exhibited by the author to colour—one might say to discolour—the facts which are presented to the reader. The book begins with a preface and introduction, which explain the scope of the work, and give one the promise of a further contribution by the same author. Romanes says that the present volume, while complete in itself as a statement of the facts of comparative psychology, has for its more ultimate purpose the laying a firm foundation for his future treatise on mental evolution. He desires to emphasise this statement, lest the critics, in being now presented only with the groundwork on which the picture is eventually to be painted, should deem the art displayed as of somewhat too commonplace a kind.

The author has been most careful to avoid being merely an anecdote-monger. All his anecdotes—and they are many—are either thoroughly well authenticated, or a note of warning is given when there is any suspicion of their authenticity, or when, from their very nature, they seem incredible. It would seem ungracious to speak of the author as making a too large use of the terms used in human psychology, but it appears at first

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ludicrous to speak of the emotional side of the mollusc or the annelid. We feel fully the difficulty that there ever must be in comparing the intellectual functions of the higher with those of the lower animals. A time must come when we shall have *basis* terms—if we may use the expression—to describe the origin of mind in animals. Undoubtedly most of the emotional feelings are necessarily related to the existence of animals in a social state. Therefore, if instead of speaking of their love, reverence, and the like, we began by discussing as a whole the social-intellectual relationship, it would be simpler and less confusing.

No one could find fault with the clearness with which Romanes has arranged the facts. The scope of the book is, as we have already pointed out, a statement of the different healthy intellectual powers as they are seen in the different genera and species of the so-called lower animals. He does not consider the morbid states of these lower animals. The care with which the author has investigated the habits of animals shows not only his love of the subject, but his power of painstaking, toilsome work of collecting and verifying. It seems always to us that the bias of love and the bias of interest are nowhere more markedly seen than in the lovers of animals, who are always, like mothers of children, not only willing, but anxious, to believe that their offspring is the most wonderful that ever existed, and facts which appear to the interested as extraordinary, may really, after all, bear very simple explanations to the unbiased. A point that necessarily occupies a good deal of attention in this book is the instinct of the lower animals, and we shall indeed be sincerely glad when we hear more of the mind of animals and less of the instinct, for it seems to us that every careful observer adds facts proving the similarity of mental function between the *lower animals* and men and thus takes away from the speciality of the much-talked-of instinct. Probably all animals, high and low, have what is rightly called instinct, having some intellectual potentialities which they inherited from past generations—organized experience which has been for the good of the species, and which is transmitted, but it is no longer to be considered an absolute, unchangeable, divine possession which belongs to the lower animals only.

We would say, then, that in this book, though much is said about instinct, the feeling of Romanes is that the term "instinct" must be used in reference to the intellectual possessions of animals, but that nothing is meant by it more than inherited and organized

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knowledge. It seems to be the essence of all nervous tissue to receive impressions from without and from within, and also to be so much influenced by these impressions that it stores up or has a memory of them. Given a tissue that receives and retains impressions, it requires but very little extension to understand the power of comparing these and acting upon them, the very survival of the being depending upon this memory of impressions received for its good and evil. Therefore, when a great deal is made in books of this kind of Memory as shown by one class of animal and another, it seems to us but an interesting collection of facts which one would expect necessarily to occur from the very existence of the animal itself. Facts of memory, facts of reasoning—*i.e.*, facts of comparing one impression with a former impression, one experience with a former experience—are constantly brought before the reader in this book, and these facts form the most interesting collection that we have ever come across.

The book must undoubtedly form a most important step in the advance of the true comprehension of mind. Most people are beginning to get perhaps rather tired of hearing Darwinism introduced into every possible branch of science, but the more thoroughly and completely we can follow the teachings of development the more clearly shall we see the truth. The book before us is one that we should most strongly recommend asylum superintendents to read, for not only is it pleasantly written and full of interesting facts, but it is one of the corner-stones of a new philosophy. We feel sure that much may be learned of the action of lower or perverted natures in man if we only sufficiently study the simpler actions in the simpler nervous organisms of animals. The time will come when some far-grasping mind like that of Goethe will be able to combine the facts of intellect as seen from the evolutionist's point of view with the aberrant forms of intellect as seen among the undeveloped idiot and the perverted lunatic, and then we may hope to have a firmer grasp of what is meant by "Mind."

The book being cheap, handy, and interesting, it seems to us almost unnecessary to do anything in the shape of analysis, but we may point out that the work is carefully divided into the natural families and orders, and that each is considered *seriatim*. As might be expected, some families fare much better than others, and one advantage of this book, at all events, will be that it will show those interested in the habits of animals the large gaps that are still left for observers. Already, among

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asylum superintendents, we have had men who were careful observers of nature and lovers of animals, and we can conceive of no occupation more healthy for the many superintendents living in somewhat out-of-the-world parts of the country than careful watching of the habits and developments of habits of animals. Ants, bees, and wasps from time immemorial have received a full share of public attention. Ants of late have had more than their due share of notice, but although some writers have considered that more intelligence has been placed to their credit than they have deserved, yet we must say that our own feeling is that they are a most interesting and instructive family to watch. Romanes himself has already written largely upon the habits of ants, and therefore speaks not only as a compiler, but as an authority. We may take the subject of ants as an example of the careful way in which the subject is treated.

He begins with an investigation of the powers of special sense, their appreciation and choice of sites, colours, sound, direction, &c. He enlarges upon the sense of direction, and this is a sense that will have to be added to those generally referred to as belonging to animals. It has often seemed to us to be present in some human beings, and we can hardly explain the facility with which animals can find their way home without crediting them with some extra sense which we do not at present understand. Darwin has referred to his horse that always turned towards its old home in whatever direction it was taken out, and the homing pigeons are still subjects of deep interest in relation to this sense of direction. Ants seem to possess it, and bees, as well as some other insects. The powers of memory in ants are next considered, and a number of observations that have been made by such observers as Sir John Lubbock and Huber show the thoroughly scientific way in which these little animals have been investigated. After this are considered the emotions. Pugnacity, valour, and rapacity have long been attributed to ants, but with regard to the tenderer emotions we have less strong evidence. The powers of communication are next dwelt upon, and many interesting facts are referred to which prove the freedom of communication which these animals possess. After considering ants as a whole, the habits in general of sundry species are considered—such as the questions of nursing the young, educating them, the keeping of slaves and aphides, the conduct of their wars, and even their fêtes, their play, their leisure, and funeral habits. Among

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their most extraordinary powers seem to be those of recognising members of the same species and of the same hillock when they have been separated for long periods of time, and what is more astonishing, and as surprising as the possession of the sense of direction, is the fact that certain ants seem to have the power of recognising the offspring from their own ant-hill, though these were removed before they had been hatched, being able to recognise as relations, young that were removed from the hill in the larval or pupal stage.

Habits peculiar to certain species.—Under this heading we have consideration of domestic, agricultural, and social habits, such as the cutting and shaping of leaves, harvesting (about which so many contradictory opinions have been expressed), the honey-making ants, military ants, and after this the subject of ants is concluded with a general summary of the intelligence of the various species.

From the above it will be seen how exhaustively the subject is treated. After ants, bees and wasps are considered, then spiders, beetles, crabs and lobsters, and fish. The subjects of snake-charming and the intelligence of birds are investigated. We were rather surprised to find the section on the intelligence of birds not so full as we had expected. The intelligence of mammalia is next discoursed upon, again somewhat briefly.

We suppose Romanes is right in spending most care and attention on those classes which are lowest down in the scale of life. The reading of this book has been attended with such genuine pleasure and relaxation, that in ending our review we would suggest that all the superintendents of asylums who have not read it should seize an early opportunity of doing so.

Shackles of an Old Love. By Mara (Mrs. Wilkin).

We are not in the habit generally in this Journal of noticing light literature, but this book, published by Allen and Co., was introduced to our notice from the fact that it describes asylum life, and to a certain extent an asylum physician and superintendent.

The book itself is full of most of the vices of the modern novel. It has the advantage, however, of being only in one volume, and not three. The style is stilted, slangy, and weak. The authoress, having a smattering of several European, one or more Eastern, and one ancient language, introduces words or phrases from these languages in the most distracting way, so

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