minds us of Hegel, who had incorporated anthropology as the first chapter of his theory of the subjective intellect, that is, according to his use of language, of psychology, an arrangement in which he was followed by his school. Dubois Reymond's thoughtful and well-expressed 'Akademische Reden' reveal the irresistible need of something beyond this material world in their acknowledgment of 'world riddles' and of psychic phenomena as accompaniments of physical processes. The physicist E. Mach's clear-sighted 'Beiträge zur Analyse der Empfindungen' keep within the limits of 'psychophysics,' without throwing any doubt on the existence of the psychical. However, the collected essays of W. Wundt, who was bred a physiologist, prove that even an investigator who starts from purely empirical causes feels the need not only of philosophy, but also of the special branches that have always been included under this head, psychology, logic, ethics; while even metaphysic, though fallen into contempt, is asserting itself again, however much the aim of this new inductive science may differ from the old speculative one that bore the name."

CONSANGUINITY AND MENTAL UNSOUNDNESS.

THE question of the effects of consanguinity is one of those vexed problems on which much evidence has been collected *pro* and *con*. The observations have been made by careful observers; and the most probable explanation of the diversity of the results reached, is that other circumstances have in some cases cancelled the bad effects of too close interbreeding, and in other cases brought them into prominence. A very fair consideration of the problem is given by Dr. G. E. Shuttleworth, in the *Journal of mental science* for October, 1886.

The common misgiving as to the propriety of cousin-marriages is of rather recent origin. In ancient times marriages of near kin were not forbidden; the first prohibition of them is in the fourth century A.D. The Church soon came to cast its odium on marriages even of the seventh degree of relationship, and the fees for removal of such objections by dispensation were an important source of revenue. This has undoubtedly influenced popular opinion on the question.

From the physician's point of view, the evidence from the animal world is important. Here there is almost a consensus, that, while the effect of 'in-and-in breeding' is to intensify *points*, in the long-run it is opposed to vigor of constitution. It is to be remembered that every breeder takes care to exclude any animals with any known morbid tendency, while, on the contrary, in the genus Homo, as Dr. Clauston remarks, there seems to be "a special tendency for members of *neurotic* families to intermarry." The result of this will be that in some portions of the population the offspring of such marriages will show the evil results of it to an unusual extent. And thus we find, that in rural and especially in mountainous districts, where the population is small and fixed, the comparative amount of idiocy is greater than elsewhere. Statistical information is inadequate on the subject: the motion to include it in the census returns of England was rejected "amidst the scornful laughter of the house, on the ground that the idle curiosity of speculative philosophers was not to be gratified." In France the returns have given rise to various estimates (varying from $\frac{9}{10}$ to $2\frac{1}{2}$ or 3 per cent) of the frequency of consanguineous marriages. Mr. G. H. Darwin came to the conclusion that in London $1\frac{1}{2}$ per cent of all marriages were between first-cousins, in urban districts 2 per cent, and in rural districts $2\frac{1}{4}$ per cent.

If, now, we ascertain the ratio of idiots and insane patients that are the offspring of such marriages to the total number of patients in the asylums, we will have some means of estimating the results of consanguinity. From quite an extended series of records, it is concluded that the ratio just referred to in the idiot-asylums is from 3 to 5 per cent: hence "*first-cousin* marriages, at any rate, are to some extent favorable to the production of idiot children." But this conclusion must be tempered by the consideration that in a large number of such cases of idiocy and imbecility other causes for this condition are present; and this consideration leads Dr. A. Mitchell to the opinion that "under favorable conditions of life the apparent ill effects of consanguineous marriages were frequently almost *nil*, while, if the children were ill fed, badly housed and clothed, the evil might become very marked." From such facts and figures we may conclude that first-cousin marriages should, as a rule, be discouraged; but that, if a close scrutiny reveals no heritable weakness, neurotic or otherwise, the banns need not invariably be forbidden.

ALLGEMEINE NATURKUNDE.

IN the production of elaborate works on natural science for the general scientific reader or student, the Germans are *facile princeps*. Besides bearing evidences of thoroughness and general accuracy, such works usually present a homogeneity and

Allgemeine naturkunde. Leipzig, Bibliographisches institut. 8°. (New York, Westermann.)

completeness rarely attained in English ones of a similar class. To vivacity of expression and the more purely literary embellishments or literary condiments, they rarely make pretensions ; and yet he who has read in the original the writings of such authors as Haeckel will readily concede that the German style may be not a whit less charming, less simple, and less interesting than the French or English, while at the same time combining, what is often such a fatal defect in many French works on general natural science, a rigid regard for scientific truthfulness. Buffon made many book naturalists, but he has much to answer for in the self-sufficient complacency and inexactness of many of the French naturalists who have succeeded him. It is a rare talent that can excel in attractive literary exposition, and yet command the respect of the critical scientific naturalist.

At least measurably successful as furnishing interesting and instructive reading for the non-scientific intelligent reader, and as an exhaustive storehouse of information for the general student, is the *Allgemeine naturkunde*, a work, of its kind, which, for fulness of treatment, richness and wealth of illustration, and, withal, general readableness, has rarely if ever had its equal. The work will be completed in nine large octavo volumes, of which four are now issued, and will contain over three thousand engravings on wood, — for the greater part original, — one hundred and twenty colored plates, and twenty maps. The series really is composed of four separate works, which might find their places on the bookshelves of the geologist, botanist, anthropologist, and anatomist, dealing with man, individually and in general, plant-life, and geology in its widest sense. It is intended as a continuation of Brehm's 'Tierleben,' a work well known in itself, as well as from the numerous engravings borrowed from it in the recent English and American natural history works of a similar kind.

The published volume of the two papers on 'Erdgeschichte,' by Neumayr, deals with general physical, dynamical, and stratigraphic geology. 'Der Mensch,' by J. Ranke, treats of the embryology, development, anatomy, physiology, psychology, and zoölogical relations of man, and is followed by three volumes on 'Volkerkunde' by Ratzel. This latter part is especially full and interesting, and is richly illustrated by engravings, maps, and colored plates. Finally, the remaining two volumes, 'Pflanzenleben,' by Maxilaun, are to contain a general exposition of plant-life, structural, physiological, systematical, and economical, with forty colored plates.

The four volumes now published — 'Mensch,' 'Erdgeschichte,' and 'Volkerkunde' (two volumes) — fully bear out the promises of the publishers. The numerous engravings, colored plates, and the typography are excellent ; the descriptive matter readable, and for the most part interesting, and scientific. The style varies, of course, with the different authors, that of Professor Ranke being less clear and terse than that of either Professor Ratzel or Professor Neumayr. From the perusal of what has already appeared, the writer has found generally but little discussion of hypotheses, and, wherever critically examined, full and latest results of modern research. Of the general reliability of the work, the authors' reputations will afford sufficient evidence.

METHODS OF ARROW-RELEASE.

THIS substantial pamphlet, reprinted from the Bulletin of the Essex institute, October-December, 1885, is a noteworthy example of the thorough methods of modern archeological research. Professor Morse has laid under contribution not only narratives of travellers and explorers among the existing savage races, but all available records, graphic and other, of ancient times, to illustrate the manner of using the bow and arrow. This remarkable invention, as the late Lewis H. Morgan, in his well-known work on 'Ancient society,' has shown, did not make its appearance until mankind was well advanced in the savage state towards barbarism ; and it has survived to the present time among primitive peoples as the principal weapon of warfare and the chase. It is reasonable, therefore, to hope with our author that interesting results in tracing the affinities of ancient races may be derived from the minute study of the different ways in which it has been employed.

Professor Morse's attention was first directed to the subject by observing that his method of shooting was quite different from that of a Japanese friend : " In the English practice, the bow must be grasped with the firmness of a smith's vice ; in the Japanese, on the contrary, it is held as lightly as possible ; in both cases, however, it is held vertically, but in the English method the arrow rests on the left of the bow, while in the Japanese it is placed on the right. In the English practice a guard of leather must be worn on the inner and lower portion of the arm to receive the impact of the string ; in the Japanese no arm-guard is required. . . . In the English method the string is drawn with the tips of the first three fingers, the arrow being lightly held between the

Ancient and modern methods of arrow-release. By EDWARD S. MORSE. Salem, Bull. Essex inst. 8°.