

not excavate at all at the spot which such an archaeologist as Clermont-Ganneau had suggested as the most likely one.

The maps and drawings executed by Mr. Dickie, Dr. Bliss's companion in the excavations, are numerous and illustrate admirably the work done.

The Gambling World. By Rouge et Noir. Dodd, Mead & Co. 1898. 8vo, pp. 373.

The History of Gambling in England. By John Ashton. London: Duckworth & Co.; Chicago: Herbert S. Stone & Co. 1899. 8vo, pp. 286.

Good for their kind are the several chapters of 'The Gambling World,' and that on the London Stock Exchange may even bring some persons to their senses. But, at the best, books that, without being works of art, have no higher aim than to amuse, almost regardless of the exact truth, are dreary things, especially when they address themselves to a class of readers who are not fond of reading. 'Rouge et Noir' may imagine that he aims to instruct; and indeed he declares that gamblers are morally certain to lose in the long run. But when an author stuffs a volume with stories that verge on the incredible, without vouchsafing any authority whatever—not even his own name—the reader is driven to judge of his seriousness by such of his statements as he is himself in a situation to test. Now, exclusive of facts that might be culled from any good encyclopædia and of facts that have been thoroughly ventilated in the newspapers, we have found other assertions here so frequently erroneous as to indicate a very jaunty attitude towards accuracy. The number 1,592,814,947,068,800 is given as "the number of combinations possible by the distribution of fifty-two cards." That it is not the number of arrangements of a full pack any person acquainted with probabilities will instantly see, from the short row of figures and because that number ends with twelve zeros. In order to find out whether it is the true answer to any problem, we have separated it into its factors, and can testify that it is the scrupulously exact number of distributions of a piquet pack among the two hands and the two parts of the *talon*; but it has nothing to do with fifty-two cards.

The innate simplicity of the gamester appears in the statement that Government lotteries and great gambling casinos are honestly conducted. Will any man of sound judgment who knows how affairs connected with Government go on in Spain and Italy, hold their lotteries to be materially more trustworthy than if Croker or Quay or Platt managed them? Or will any expert in legerdemain say that it is impossible by a combination of interests to secure the drawings of predetermined numbers? As for keepers of roulettes, they are not intelligent enough to be honest; for they have themselves risen from the ranks of gamesters, and no gamesters are sound reasoners. A private gentleman who ordered a roulette from a house in New York whose business it is to make such things, found that, without special directions to the contrary, it would be furnished, as a matter of course, with a contrivance for correcting the luck. A man who was, and had for many years been, employed in a well-known gambling-house near Madison Square, confessed that in all his experience he had never known a player to carry away \$200 of winnings. The limit which is every-

where put upon the martingale shows the stupidity of the management. A comparatively low limit upon initial bets may be set down to extreme conservative caution, if this seems compatible with the gambler's nature. But a limit upon the continuation of martingales is simply ridiculous, since the bank is perfectly secured against any heavy loss, and the higher the martingale is pressed the greater the proportionate winning of the bank. At an ordinary roulette-table with a double zero, against a player whose fortune is 1,023 times his initial bet, and who doubles his bet whenever he loses, the bank wins 411 francs for every 613 francs risked; while if the player's fortune is 1,048,575 times his initial bet, the bank will in the long run make a profit of 672,676 francs on every 375,900 francs risked. The banker bought, therefore, to encourage martingales as much as possible: for at ordinary betting the bank's profits amount only to one franc on every eighteen risked. Yet even if the player bets the same amount every time on a simple chance, which is his most advantageous course if he will play, it is unlikely that he will ever be able to net a gain of seven times that amount, though he have the fortune of Rothschild at his back. Even if there is but a single zero, he is not likely ever to net a gain of thirteen times his bet; so that should he lose thirteen times his bet, he had better give up all hope of regaining it.

The most advantageous course of all is not to play at all, and the next to that is to make but a single bet. Thus, for every hundred players who should each make a single bet of 100 francs on a color at single zero roulette, 48.65 would gain 4,865 francs in all, while 51.35 would lose 5,135 francs. If, however, each player were to make one-franc bets until he had either won 12 francs or lost 100 francs, 52.15 players would win their 12 francs, making 626 francs, while 47.85 would lose their hundred francs, putting 4,785 francs to the other side of the account. We need hardly say that 'Rouge et Noir' falls into most of the usual pitfalls which the doctrine of chances has prepared for those who have but a slight acquaintance with it.

The book is very prettily got up, and does not weigh a kilo, which ought to be the limit for a book to be read continuously.

Mr. Ashton's 'History of Gambling in England' is a beautifully printed volume and a work of sufficient research. Of its host of anecdotes, almost all are supported by contemporary testimony and the majority by good testimony. This is the only branch of history that is in an entirely satisfactory condition or about which we know all that a reasonable curiosity could, for the present, desire to know. But there is no other so blank for those who seek in history some consolatory or elevating aspects of human nature. Of the two classes that walk its stage, the sharpers are engaged in a business a good deal like other sorts of business in which great fortunes are amassed, and some readers may accord them some measure of esteem for not founding hospitals and universities or otherwise advertising their compassionate hearts. But there can be no doubt they would do so if it could in any way further their interests. They are really as unestimable and uninteresting a class of bankers as can be found. On the other hand, the pigeon is a simpleton so intent upon gaining some inequitable advantage that his small stock of good sense completely deserts him—a creature who seems put into the

world by a beneficent Providence in order to serve as prey for business men, without offering any handle for benevolent regard.

The book will divert us all with its pictures of the manners and morals of worlds not too remote from our own, and by contrast brings into view the greater self-control to which modern conditions of middle-class life are training men. One regrets that the history should break off at the year 1845; but Mr. Ashton has rightly judged that it would be "inexpedient to give any modern instances." It would, indeed, be exceedingly inconvenient to publish an unvarnished picture of life in a high gambling circle.

The Dawn of Reason, or Mental Traits in the Lower Animals. By James Weir, jr., M.D. Macmillan. 1899. 12mo, pp. xiv, 234.

This is a modest little book which will interest many persons besides professional naturalists, and may instruct some of the latter. The title raised in our mind some vague fears that we might find physiology and psychology mixed up inexpertly with metaphysics; but we see in the writer a close observer, who takes his stand on firm ground, and goes into the objective world of animals for his facts. The "lower animals" are all animals except man; but how "low" some of them are in the scale of organization is fully appreciated by few persons. Insects and worms are lowly creatures in comparison with man, but vastly complex organisms in view of such animated simplicities as infusorians or protozoans. Mind is regarded by Dr. Weir as a resultant of nerve action, or neuroplasmic action, "through which and by which animal life in all its phases is consciously and unconsciously, directly and indirectly, maintained, sustained, governed, and directed" (p. 1). No one denies an amoeba the sense of touch at least, and it would be rash to deny this animalcule a kind of conscious volition, as in the choice of food. If we accept Dr. Coues's definition of nerve in the widest sense as "a line of least resistance to molecular motion in any organism," an amoeba has some sort of a nervous system, apparently what Dr. Weir calls neuroplasmic, and thus a mind. True nerve tissue is demonstrable in all metazoa, from coelenterates upward, and the author is inclined to believe that it is present in some animals below the hydrozoans, having verified H. James Clark's observations ('Mind in Nature,' p. 64) regarding the protozoan *Stentor polyphemus*, and seen "unquestionable acts of conscious determination" on the part of this little creature (p. 41). However the case may be in the border land of nascent nerve, no doubt of mind enters the regions, however lowly, where a nervous system, however simple, is an accomplished fact; and Dr. Weir's book proceeds to explore this whole region to discover, if possible, what sort of minds are possessed and utilized by animals lower than man.

This distinctly raises the question of instinct versus reason, and Dr. Weir's strongly supported contention is, that the two faculties differ only in degree, not in kind. We say strongly supported, for the author adduces an array of facts, derived from actual observation, which are alike indisputable and astonishing. Just possibly, here and there, he reads into the actions of some insect or other humble fellow-creature something that such an animal never thought of and could not understand; but the evidences

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