

weights. The one asserts no more of Time than the other asserts concerning the atomic weight of oxygen;—that is, just nothing at all. If we are to suppose the idea of Time is wholly an affair of immediate consciousness, like the idea of royal purple, it cannot be analyzed and the whole inquiry comes to an end. If it can be analyzed, the way to go about the business is to trace out in imagination a course of observation and reflection that might cause the idea (or so much of it as is not mere feeling) to arise in a mind from which it was at first absent. It might arise in such a mind as a hypothesis to account for the seeming violations of the principle of contradiction in all alternating phenomena, the beats of the pulse, breathing, day and night. For though the idea would be absent from such a mind, that is not to suppose him blind to the facts. His hypothesis would be that we are, somehow, in a situation like that of sailing along a coast in the cabin of a steamboat in a dark night illumined by frequent flashes of lightning, and looking out of the windows. As long as we think the things we see are the same, they seem self-contradictory. But suppose them to be mere aspects, that is, relations to ourselves, and the phenomena are explained by supposing our standpoint to be different in the different flashes. Following out this idea, we soon see that it means nothing at all to say that time is unbroken. For if we all fall into a sleeping-beauty sleep, and *time itself stops during the interruption*, the instant of going to sleep is absolutely unseparated from the instant of waking; and the interruption is merely in our way of thinking, not in time itself. There are many other curious points in my new analysis. Thus, I show that my true continuum might have room only for a denumeral multitude of points, or it might have room for just any abnumeral multitude of which the units are in themselves capable of being put in a linear relationship, or there might be room for all multitudes, supposing no multitude is contrary to a linear arrangement.

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Walpole, as usual, treats history topically, taking up a movement or cause at its beginning and following it through to its conclusion. Having covered the Franco-Prussian war in his second volume, he selects for his main subjects in his third the Treaty of London and the Geneva Award, the close of Gladstone's ministry, and the opening of Disraeli's spectacular administration. An American cannot fail to be gratified at the evidence on every page that Sir Spencer is not only familiar with the American sources, but also appreciates our point of view. The grave contention that was amicably settled at Geneva he here calmly describes. On the whole, we feel that the historian does full justice to the American position, and that he considerably refrains from emphasizing, as he might very properly have done, some of the astonishing performances of our public men. Charles Sumner's course, for instance, which finds few apologists now even in America, might be scathingly criticised by an English writer; but Sir Spencer withholds his hand. Possibly in his analysis he has somewhat underestimated the personal influence of the late J. C. Bancroft Davis in bringing about the final result; but his account in general is both candid and conclusive.

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Very remarkable is the monograph on "Ritual and Religion," which fills nearly a third of this same volume. Walpole defines the position of the Anglican Church in the middle of the nineteenth century, and then takes up one by one the chief manifestations of change, the branching out of High, Low, and Broad sects, the basic ideas of the leaders—Maurice, Colenso, Pusey, Stanley, Seeley, and the rest—and especially the questions which, after being agitated in the Church, came at last before Parliament for a settlement. A foreign Christian who reads for the first time this amazing catalogue of sacerdotal finicalities—such as whether to burn candles on the communion table; whether to call this table an altar, and make it of stone instead of wood; whether to turn to the east, etc., etc.—might conclude that since Nero fiddled when Rome was burning, no similar example of irrelevancy has been witnessed. Walpole himself, however, indulges in but little comment, and in no sarcasm. He prefers to state that while these matters were absorbing the medieval minds in the Anglican Church, modern science was inexorably changing the attitude of every reasoning man or woman towards Bible, revealed religion, and supernaturalism. Sir Spencer concludes with a brief outline of Tennyson's "In Memoriam" which he regards as the typical expression of the age.

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Thought and Things: A Study of the Development and Meaning of Thought, or Genetic Logic. Vol. II. Experimental Logic, or Genetic Theory of Thought. By James Mark Baldwin. Pp. 436. New York: The Macmillan Co. \$2.75 net.

The author here continues the working out of his purpose with the same industry, and with the same quality of ability, if not perhaps in so full measure, as in the first volume (see the *Nation* of February 28, 1907, p. 303). But it now becomes quite clear that, however desirable the main inquiry of the work may be in itself, the project of connecting it with the science of logic was very unfortunate for the one subject and for the other.

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given to them. Whether we say that among sea-animals will be found some that give milk to their young or whether we say that among animals that give milk to their young will be found some that inhabit the sea, is for all purposes of argumentation quite indifferent; and the equivalence is here so evident that the school of "exact," or mathematical, logicians are almost unanimous in adopting, as their standard, or canonical, form of expressing the same fact, substantially this: "There is an aquatic mammal." Newton's great discovery is usually stated in elementary books, and is thought of by ordinary people in the form that each separate body in the solar system has an instantaneous component acceleration toward every other proportional to the mass of that other and inversely proportioned to the square of the distance between them, but is otherwise constant for all and at all times. But in writings on celestial mechanics (as in Equation 15 on p. 175 of Dr. Moulton's admirable little "Introduction" to the science), the form in which the same fact is often stated and intended to be thought is that the sum of the *vires vivæ* (or their halves, according to the old definition) of all the bodies of the system subtracted from the sum of the reciprocals of the distances between the several bodies, each reciprocal being multiplied by the product of the masses of the pair of bodies concerned and these masses being expressed in terms of a gravitational unit, remains unchanged. Since these two statements represent, and would in all conceivable cases represent precisely the same state of things, they are for all purposes of reasoning interchangeable. It follows that for logic they are equivalent, although, since this equivalence is not self-evident, they cannot strictly be called identical. From such considerations it follows that, in general, logic has nothing to do with different dresses of thought which cannot possibly represent different states of things; or at most has no more to do with them than to demonstrate that whatever state of things is represented by the one is equally represented by the other. That this principle, suitably modified for modals, ought to determine what is and what is not relevant to logic has been practically or virtually acknowledged in every system of logic excepting some of those which have arisen since the bankruptcy of Hegelianism, with the consequent *de facto* supremacy of psychology in current philosophy. But none of those which deny that application of the principle have improved reasoning in the smallest particular.

What Professor Baldwin means by calling his logical system "genetic" is that in it the main stress is to be placed upon the psychical processes by which each form of thinking is brought about.

As soon as the first volume came before us, we thought it almost if not quite inevitable either that there was to be no logic, properly speaking, in the work, or else that the logical matter was to be confused by the introduction of entirely irrelevant conclusions. Since the whole of that first volume, with the exception of seventy pages, was regarded by the author himself as relating to "pre-logical" topics, and since it seemed unfair to condemn the whole on account of that fragment of seventy pages, or simply because it did not relate to logic as we conceive that science, we contented ourselves with acknowledging that it was a sound piece of scientific work as far as it went. But we find the second volume to be distracted from the pure consideration of the genesis of thought by discussions of truly logical questions—discussions which are far from strong in themselves, and which do not evince the knowledge of logic that would have been necessary for carrying them through intelligently. In these discussions, positions are taken which neither necessarily result from the genetic theory nor are supported in any solid way, but which, rather, seem to have been selected on grounds of personal predilection, or at random. For example, the author regards judgments of probability as intermediate between the "universal" and the "particular" propositions of formal logic. He comes to that opinion in consequence of his understanding the "particular" form as being, for example, "Some men are mortal," and the "universal" as being, "All men are mortal." He thus shows us that he has not read logic with sufficient attention to remark that the subject in both the logical forms is in the singular number, "*Some man is white,*" *aliquis homo est albus*, and "*Any man is white,*" *omnis homo est albus*. Had he told us that he proposed to wipe out the existing terminology of logic and to use the old terms in new senses, the question would have been a different one; but as the architect of a "Dictionary of Philosophy," he must, and does, know that to do so (especially without notice) would have been to trifle with the ethics of science; and therefore he certainly intends to use the terms "universal" and "particular" according to their authoritative definitions. He even goes so far as to say that when in a judgment of probability, the probability becomes 1, the proposition becomes the logical "universal." A student of the doctrine of chances who did not distinguish between the two would soon find himself in a snarl. A very large number of players sit down to play an even game against a banker. That is, each bets at each play one franc that an event will turn out one way or another, the probability being one-half that it will turn out in the one way and one-half that it will turn out in the other

way. If the player loses, he pays a franc to the banker; and if he wins, he receives a franc from the banker. But as soon as a player has made a net gain of one franc, he retires from the table, and his place is taken by a fresh player. On the other hand, as soon as the banker has netted a gain, he yields the bank to a fresh banker. Now, every player and every banker is supposed to have unlimited funds or credit. Consequently, by one of the easiest of those problems in the doctrine of chances that are called "problems on the duration of play," the probability is 1 that any given player will, sooner or later, make a net gain, and the probability is equally 1 that every banker will ultimately net a gain. So, then, if probability 1 were equivalent to a logical universal affirmative, every player and every banker must come out of the game richer than he went in, which would obviously be making money out of nothing. But the truth is that probability relates to what would happen in "the long run"; that is, in an endless run; and probability 1 means that in such endless run the expectation to which it refers will be verified infinitely oftener than it is falsified; but, for all that, it may be falsified infinitely often. A teacher of logic ought to make this clear.

Some of Professor Baldwin's work in this volume is of a far more ambitious kind than that which we have illustrated. The reader will naturally suppose, however, that if he has not been able to control his mind to sound reasoning in the small problems, he is unlikely to have done so in the greater ones. At any rate, we can testify that, having gone through the whole with the utmost care and with predilections not unfavorable to the author, we do not think it worth our reader's while to enter into the necessarily more lengthy criticisms of the more difficult problems as treated in this volume. We greatly regret our disappointment with it.

Science.

African Nature Notes and Reminiscences. By Frederick Courtney Selous. New York: The Macmillan Co. \$3 net.

This contribution to hunting lore and natural history is by the last of the big-game hunters of South Africa. It is an attractively written narrative of the adventures of over thirty years, spent mostly in the regions south of the Zambesi. President Roosevelt suggested publication and furnished a "foreword" in which he heartily supports, from his own observations in the Rocky Mountains, the views of the author as to the fallacy of much of the theory as to protective coloration of animals. Mr. Se-