of free balloons ascended from the grounds carrying military and civil members of the Congress, one of the latter ascents being for meteorological purposes and another for physiological experiments. A sumptuous breakfast, given by the officers of the Balloon Battalion in their Casino, was attended by the Minister of War, and at a banquet given in the Zoological Garden in honor of the Congress, Prince Frederick Henry presided. It is evident, therefore, that the organizers of the Congress succeeded in pleasing their guests and in giving the foreign military officers, who represented the chief European powers excepting France, an idea of the high efficiency of military ballooning in Germany. As regards the exploration of the atmosphere, nowhere is there a station so completely equipped as the one directed by Dr. Assmann, and yet, notwithstanding the time and money expended to bring it to this condition, the site near a great city having proved unfavorable for kite-flying, the observatory will be moved into the open country about a hundred miles northeast of Berlin. The observatory of M. Teisserenc de Bort has likewise been removed from the neighborhood of Paris for similar reasons, and this action by both a government and a private institution shows that in Europe 'the sounding of the ocean of air' is regarded as being of sufficient importance to justify its prosecution under the best possible circumstances.

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SCIENTIFIC BOOKS.

The Varieties of Religious Experience: A Study in Human Nature. Being the Gifford Lectures on Natural Religion delivered at Edinburgh in 1901–1902 by WILLIAM JAMES, LL.D., etc., Corresponding Member of the Institute of France and of the Royal Prussian Academy of Sciences, Professor of Philosophy at Harvard University. New York, London and Bombay, Longmans, Green and Co. 1902.

In the portion of this book which is wholly novel in academic philosophy, that which gives a careful statement and a deliberate discussion of 'the religion of healthy-mindedness' (including 'mind-care,' 'Christian science,' etc.) the reader has a fair gauge of the author's spirit and method throughout. We have the 'human documents,' the religious feelings and ideas as set forth in extracts chosen with the happiest discrimination, the analyses and explanations of psychology, and the author's hospitable-minded but critical summing-up. We meet with that reluctance to deny, that wistful sense of 'more beyond,' which is so singularly blended in his writing with sceptical science. We have that vivid perception of the concrete in all its variety, that distrustful interest in abstract theory in all its variety, which make us feel somewhat tossed about on the waves of suggestion, and yet distinctly safer than in the hands of the artificer of consistent systems. And lastly we have the care for results, for the difference a theory makes to life, joined with an individualism, a willingness to live and let live in matters of belief, which would encourage diverse theories to bring forth practical fruit after their kind and so put themselves to the proof. We understand how it could happen that Professor James has been falsely set down as a spiritist, merely because of his completer suspension of judgment in subjects where to hesitate is deemed hardly consistent with scientific propriety. On this point he has elsewhere made his views explicit.* In these peculiarly frank pages there is no trace of any taste for the conception of spirit-possession; it figures, indeed, not at all; but there is repeated refusal to assume that human consciousness is subject to no impressions but those of sense.

Highly characteristic of their author, these lectures stand in marked contrast with the other philosophic courses of the Gifford series. Such lecturers as Professors Caird, Ward and Royce offered abstract reasoning in proof of a

* See review of Hodgson, 'Further Report on Certain Phenomena of Trance,' *Psychological Review.* 1898.

philosophic theism or in confutation of its adversaries. Mr. James writes: 'In all sad sincerity I think we must conclude that the attempt to demonstrate by purely intellectual processes the truth of direct religious experience is absolutely hopeless.' He throws himself instead upon that experience itself, describing its vital richness and variety and analyzing its nature with his well-known gifts of psychologic insight and of style. The aim is to keep as close as possible to the recorded facts of personal religious feeling, especially in its most acute and unprompted phases, since there only do we study the power of religion at its source. To this end ecclesiastical and other social forms are left on one side. To this end too the pages teem with extracts from autobiography, Catholic, Protestant, and non-Christian, illustrative of varied forms of spiritual life. The learning is immense, and the profusion of vital and memorable passages cited makes the volume a treasury in this kind. The author stands by as interpreter, comparer and analyst, and the extracts are woven into a somewhat carefully planned progression of chapters. But he comes not only as a psychologist to describe and classify, but as a philosopher to judge. Indeed the psychologist could hardly seize the nature of the religious sentiment without some estimate of its service and meaning in human nature. But here too his appeal is solely to experience. 'The religion of healthy-mindedness,' the religion of conflict and remorse, conversion, the asceticism of the saintly life, mysticism, dogmatic theology, ritual, confession and prayer are judged by their fruits alone. Thirty years ago Matthew Arnold laid it down that the basis of religion must be sought in the verifiable facts of present human nature and life. Mr. James's attitude is (with one considerable reservation) similar, but it results in a less dry and moralistic conception of that basis. Arnold (though not trained himself in the scientific school) wrote in days of belligerent science and saved but little from the siege. The present work, coming as it does from a master of contemporary psychology, marks a point where science has found its way into too many recesses of human nature to remain in a militant mood toward any of the great propensities whose roots it finds there. Arnold almost confined himself to the moral element in religion, but we have here an interpretation of what must be more broadly called the spiritual.

To some critics, no doubt, the book will hardly seem to invite with any emphasis the term scientific; nor even the term philosophical. Not to dwell upon the unconventional play of wit and imagination in the style, an author who makes so little effort to maintain a systematic rigor of treatment, and who deliberately classes himself as a 'piecemeal supernaturalist,' has chosen, it might seem, to quit the ways of contemporary research. And his supernaturalism might make even a limited comparison with Arnold seem inept. But indeed both what there is of supernaturalism in the book (and when one tracks it resolutely through the various qualifications it proves a somewhat modest quantity) and the indifference to systematic forms, which is indeed carried to a fault, are connected with the author's conscience and candor as a seeker after fact. He has an evident dread of summary divisions and pert generalizations that 'substitute a rude simplicity for the complexity of nature,' and whilst handling and examining such as have been propounded he refuses to be restricted by them. Rejecting the *a priori* methods of some of his predecessors in the Gifford chair, he has more than a usual share of the restless spirit of induction, and will not close the gates whilst but ninety-and-nine of the facts lie safely in the fold. It is the same demand for reality and impatience of formulas thinner than the fact that drives him into what he quaintly calls his 'crass supernaturalism.' "Religion, wherever it is an active thing, involves a belief in ideal presences [*i. e.*, exalted but real presences] and a belief that in our prayerful communion with them work is done and something real comes to pass." It is the fear of 'explaining away,' the distaste for 'mere' and 'nothing but,' the sheer fidelity to the spiritual consciousness of which he is interpreter, that forces him, as he conceives, to regard a reference to the supernatural as essential to com-

plete religion, and such a religion as essential to complete life. Justified or not, his conclusion is due to a sympathy which, necessary for insight as it is, belongs to the very spirit of science when it takes the form of psychology and advances into human nature. One may wish in some particulars to amend the conclusion, but one must own one's debt for an incomparable rendering of the facts.

In undertaking his 'descriptive survey' the lecturer warns his hearers to distinguish between assertions of psychological or physical fact and assertions of spiritual value. The value of a man's religious propensities cannot be judged by the circumstances of their origin. The opening chapter, on 'Religion and Neurology'—announced as a lecture at Edinburgh under the vivacious title 'Is Religion a Nervous Disease?'—deals with the 'medical materialism' which would explain away the intenser spiritual experiences as due to bodily disturbance. "Medical materialism finishes up Saint Paul by calling his vision on the road to Damascus a discharging lesion of the occipital cortex, he being an epileptic. It snuffs out Saint Teresa as an hysteric, Saint Francis of Assisi as an hereditary degenerate. George Fox's discontent with the shams of his age, and his pining for spiritual veracity, it treats as a symptom of a disordered colon. Carlyle's organ-tones of misery it accounts for by a gastro-duodenal catarrh." To which Mr. James answers that by the first principle of physiological psychology "there is not a single one of our states of mind, high or low, healthy or morbid, that has not some organic process as its condition. * * * If we only knew the facts intimately enough we should doubtless see 'the liver' determining the dicta of the sturdy atheist as decisively as it does that of the Methodist under conviction anxious about his soul. When it alters in one way the blood that percolates it we get the Methodist, when in another way the atheist form of mind." Since all thoughts have physical conditions, no thought is by that mere fact discredited. Nor is the distinction between healthy and unhealthy physical conditions decisive in the matter. A temperament nervously unbalanced, however inferior from the standpoint of personal comfort and longevity, is compatible with high social usefulness, may even, in certain forms of such usefulness, be a powerful aid. We must judge the spiritual value of mental states by experience of their results for life. This is something upon which their bodily antecedents shed no light. "When we speak disparagingly of 'feverish fancies,' surely the fever-process as such is not the ground of our disesteem—for aught we know to the contrary, 103° or 104° Fahrenheit might be a much more favorable temperature for truths to germinate and sprout in than the more ordinary blood-heat of 97 or 98 degrees. It is either the disagreeableness itself of the fancies, or their inability to bear the criticisms of the convalescent hour." "By their fruits ye shall know them, not by their roots."

As a purely negative argument, the repulse of an attack, this is admirably conclusive. But when the positive principle is laid down, when consequences are presented as the sole test of religion, there is something else to be said. Origin cannot disprove value, but then consequences cannot prove truth. If religion undertakes to tell of the supernatural, we may know it by its fruits as valuable, but not as true. This, however, seems upon the whole to be the author's view. When in the final chapter it becomes a question, not of human value, but of objective truth, his standards are of another order. In that chapter, however, he first recognizes as tenable the position that religion is a purely human and natural phenomenon, existing for its psychological function; its supernaturalism being but a symbolic expression of natural fact. In that case of course religion grown clear-sighted would assert as literal truth nothing for which universal experience did not vouch; the test of value and the test of truth would coincide. His own analysis is quite consistent with this position. "There is a certain uniform deliverance in which all religions appear to meet." This deliverance tells of "(1) an uneasiness, and (2) its solution. The uneasiness, reduced to its simplest terms, is the sense that there is *something wrong about us* as we naturally stand. The solution is a sense that we are

saved from the wrongness by making the proper connection with the higher powers. * * * Along with the wrong part there is a better part of him, even though it be a most helpless germ. * * * When stage two (the stage of solution or salvation) arrives, the man identifies his real being with the germinal higher part of himself; and does so in the following way. He becomes conscious that this higher part is * * * continuous with a MORE of the same quality, which is operative in the universe outside of him, and which he can keep in working touch with, and in a fashion get on board of and save himself." This *more,* Mr. James is disposed to think, is first of all the subconscious mind or 'subliminal consciousness' whose discovery in 1886 was 'the most important step forward that has occurred in psychology' since he became a student of the science. In conversion, mystical experiences, 'mind-cure' and the effects of prayer, he offers abundant reason for thinking that influences from this region play a leading part. "It is one of the peculiarities of invasions from the subconscious region to take on objective appearances and to suggest to the subject an external control. In the religious life the control is felt as 'higher'; but since on our hypothesis it is primarily the faculties of our own hidden mind which are controlling, the sense of union with the power beyond us is a sense of something, not merely apparently, but literally true."

How completely this accords with Arnold's conception of the name God as a symbolic expression for the purely natural stream of tendency, not our narrower selves, that makes for righteousness, will be seen at once. Beyond this, our author holds, articulate proof cannot go. But let us not, therefore, he would add, make haste to close the door against what may lie beyond. Here begin his 'supernaturalism' and the grounds he recognizes for faith in its 'objective truth.' From two points of view it is legitimate to cross the line. First, the luminous perceptions of the mystical state, supposing them to be as they are reported, are by the logic of the case all-sufficient for the perceiver, but unfortunately non-transferable. Secondly, those who do not share the mystical experience may 'in the exercise of [their] individual freedom' embrace 'over-beliefs' and 'build out their religion' in the direction to which their inward need and 'the total expression of human experience as [they] view it objectively' seem to point. This is of course the thesis of his well-known essays on 'The Will to Believe.' The last phrase quoted shows him still holding to 'experience.' It is not to mere desire or will that he consigns the decision—so one is led, despite some of his own words, to infer; but to the inmost judgment, dealing with probabilities and tokens too delicate for speech. Thus we have in the second basis of belief a fainter sort of perception, which, like the first, must be incommunicable. According to Mr. James's own profession of faith, 'in communion with the Ideal new force comes into the world, and new departures are made here below.' The supernatural force probably enters 'through the subliminal door,' *i. e.,* affecting the subconscious life first, and through it the conscious life. "The current of thought in academic circles runs against me, and I feel like a man who must set his back against an open door if he does not wish to see it closed and locked." That is, though there is nothing, as he has shown, in the psychology of religion that does not seem explicable by natural causes, yet such is our author's jealous fidelity to the religious consciousness and the forms its experiences take that he will not accept an explanation that seems to him to impoverish their meaning. One might suggest that these forms, as a symbolic expression of the deepest facts in human life, are no greater than the things symbolized; and that, needful though it be to preach to science an open imagination, yet it is no service to the general world to identify religion with what is from the general standpoint a mere possibility, not a sure and common possession.

I have been obliged to neglect some of the chief thoughts of the book, such as the psychological distinction between 'moralism' and religion (which recalls the writings of the author's father, the elder Henry James), that between the 'once-born' and 'twice-born' types of religious spirit, the comparison between the principle of modern 'mental heal-

ing' and that of Luther's 'justification by faith,' the profound interpretation of asceticism, etc. Of the work as a whole one may say that it is precisely its 'unsatisfactoriness,' the pregnancy of its paradox in leaving so many doors open and yet keeping so much science within, by which it serves us best. Coming when psychology has just reached the study of religion, it can hardly fail to deepen the whole of the research to which it brilliantly contributes. DICKINSON S. MILLER.

Fishes and Fisheries of the Irish Sea: W. A. HERDMAN and ROBERT A. DAWSON, London, George Philip & Son. 1902. 4to. Pp. 98.

This is the second memoir of the Lancashire Sea-Fisheries Committee, of which Professor Herdman is the honorary director of the scientific work and Mr. Dawson the fishery expert. It is the outgrowth of studies of fishes of the Irish Sea commenced many years ago by Herdman, in connection with the work of the Liverpool Marine Biology Committee. The systematic consideration of the fishes constitutes the major part of this report, but much collateral information adds to its value. In dedicating it to the members of the Lancashire and Western sea-fisheries joint committee, the authors express the hope that the work may fill a want as a guide to the fish and fisheries of the region, and that it may be of value to fishermen and others at home and to fishery authorities and scientific men abroad.

The physical features of the Irish Sea are briefly described under the head of area, depth, rivers and estuaries, temperature, specific gravity, tides and currents, and bottom deposits. This sea, which has an area of about 17,250 square miles, may be regarded as a landlocked body, for the connections with the North Sea (St. George Channel and North Channel) constitute only one tenth of the circumference. In this respect the Irish Sea is said to be unique, for no other sea of equal extent is so completely closed in by land belonging to one nation. "Consequently the Irish Sea seems peculiarly well fitted for those experiments in fisheries administration and cultivation which depend upon identical fisheries regulations."

In connection with the study of the sudden appearance and disappearance of swarms of copepods and medusæ, and the influence of the movements of such and other surface food materials on the migration of fishes, two thousand drift bottles were dropped into the sea at various places, and their behavior forms the basis of the chapter on tides and currents. The recovery of over forty-two per cent. of the bottles furnished data as to the combined effects of tides, currents, and prevailing winds on the distribution of small surface organisms. Considerable influence seems to be exerted by winds on the movements of fish ova, fish larvæ, the fish food, and hence on the abundance of particular species in a given region. The two tidal streams which pour into this sea meet and neutralize each other, causing a zone of water, which extends from one shore to the other and in places is twenty miles wide, where no tidal currents exist, but only a rise and fall; twelve per cent. of the drift bottles were caried by winds from one tidal system to the other.

The nature of the bottom deposits is regarded as the most important of the various factors determining the distribution of animals over the sea-bottom, and this subject, therefore, receives special consideration; and, in connection with the chapter on the distribution of fishes, etc., constitutes the most interesting and important section of the memoir. Sample lists of all species of animals taken in dredge-hauls in different parts of the sea show how the physical conditions influence the abundance of animals as regards individuals and species and make it 'clear that whether it be a question of mere *mass* of life or *variety* of life, haul for haul, the shallow waters can hold their own against the deep sea, and form in all probability the most prolific zone of life on this globe.' This zone in the Irish Sea affords two very distinct types of abundance: the Welsh and Manx coasts are characterized by rocks and sea weeds, the Lancashire and Cheshire coasts by sand and mud; the shore waters of the former abound in species, those of the latter in individuals.

The fishes of the Irish Sea, of which a freely annotated list is given, comprise 141