# HOW CAN YOU HELP BELIEVING?

BY T. SWANN HARDING

IT was my pleasure but recently to hear a lecture by a Scottish gentleman who was a Vice President of the American Society for Psychical Research. He seemed to be the hard-headed sort, difficult to convince, slow to believe, and he was distinctly above average in intelligence and education. Yet his ready capacity for belief almost made me feel that he might say any minute—"Tell me something preposterous—no matter what—and I'll believe it right away!" Given his premises, he built up an extremely logical and convincing case for the existence in the "invisible parts of this world" of disembodied spirits of the departed who could, with proper human cooperation, communicate with those of us who have not yet passed on into dematerialization. Fraud he brushed aside with a mere gesture, telling us that any alert investigator could easily detect fraud after two or three sittings. The "facts" he presented were those of Home and of Piper, of aerial guitars and violins being played without human contact but at human command and, finally, the case of deceased brother Walter who worked through sister Marjorie in Boston.

Walter was proved by experiment to breathe carbon dioxide—when he desired to respire; he whistled while the mouths of his audience were proven closed by a method that seemed convincing in the telling; he sang and told jokes and finally produced his finger prints in suitable wax. The finger prints were certified to be Walter's, and not those of any present at the seance, by a "government expert," and experts at various police headquarters. This sounded imposing and, though irrelevant to the basic matter at issue, seemed to prove "scientifically" convincing.

Eventually the lecturer summarized. He concluded from these facts, attested to be such by eminent scientific men, that disembodied spirits do exist, that they do communicate with living human beings under proper conditions, that immortality is an undeniable scientific fact, and that the persistence of the personality after death is scientifically established. Naturally he adduced such men as Crooks, Wallace, James, Hyslop, Flammarion, Lodge and Meyers as pure scientists who were convinced of these things, and the authority of their unassailable scientific achievements was expected to convince us, the lecturer's hearers, about matters remote from their specialized field. Yet the scientist's normal problems and training perhaps render him even more gullible by magical or psychic sharpers than the ordinary man of intelligence who has not so rigorously concentrated his attention upon material reality.

I was left with a perfectly overwhelming astonishment at the ability of people to believe. Belief remains unregulated as yet in civilized society. All tribes everywhere have found it necessary to restrict the powerful sex urge by some means or other, and civilized men have built thereupon a very ideal and almost ethereal structure of romantic love. Most men have erected about the pure hunger urge limitations which have finally produced an edifice that is almost esthetic regarding what is basically a very ordinary and slightly repulsive physiological act. But about this equally powerful urge to believe we have done almost nothing, and even scientists tend over and over again merely to find facts to support their personal prejudices, or bad reasons for believing what they believe on instinct anyway. The urge to believe badly needs regulation, restriction and scientific management.

It became quite plain to me as the lecturer spoke that he neither knew scientists nor did he have any practical experience with scientific method. Eighteen years in laboratories of chemical research have all but convinced me that it is quite possible for a man to take any belief whatever and find more than adequate facts and reasons to support it—right at the same time that other scientists believe the opposite and find facts and reasons apparently just as adequate to support them. Secondly I have discovered that scientists are not—even the greatest of them—competent critics of all things. They are usually quite narrow specialists who, while alert and highly critical in restricted segments of experience, may readily be imposed

upon elsewhere, while their views about matters remote from their specialty are usually no more profound or wise than those of a chiropractor on economics or of a dentist or a motorman on the Einstein theory.

Thirdly—and what is so frequently neglected by laymen—a research investigator does not attain gigantic and gargantuan conclusions from groups of startling but essentially uncorrelated phenomena even after he has encountered such phenomena for thirty or forty years. He is not impelled to brush aside objections, assume fraud is impossible (i. e. that his shrewdness is matchless) and reach positive conclusions of tremendous import in the face of curious facts which elude his comprehension. In short even I, with my modest laboratory experience, known too well how easily inanimate things can completely baffle or deceive the investigator in physical science to permit me to believe psychic hypotheses very readily. The lecturer spoke on "scientific proofs of immortality;" he presumed to be following scientific method; he made it plain that he had no accurate conception of scientific method at all.

Returning to the lecture: There were adduced certain events and certain people certainly saw certain mysterious things. These events were the effects of causes unknown. Yet from the effects the lecturer hypothecated the cause; he then at once hypothecated from the hypothetical cause an entire system of broad philosophical views. This astounding procedure he presented to us as scientific. As a matter of fact it was not even a good caricature of scientific procedure, and yet it is increasingly evident to me that for some reason such procedures pass current among quite intelligent people today as thoroughly grounded in scientific method.

In the first place no true scientist casually brushes aside the possibility of fraud or error. He is very self-critical and self-analytical and realizes that even the hardest material facts repeatedly impose upon his judgment. In the second place he is very careful how he hypothecates causes when he is faced with what is a mere heterogenous collection of happenings or effects. Thirdly, he is definitely opposed to the process of drawing broad, general philosophical conclusions from his work, so much so that he at times tends to ignore the encroachments of other metaphysical systems which seriously threaten his method and the continuation of his researches.

The amazing capacity of human beings for belief, however, astounds me more than anything else. Something ought to be done about it! I repeatedly determine not to be astounded by it and yet just as repeatedly find myself astounded all over again. After eighteen years of research chemistry I found that I knew a little about a narrowly segregated field of the chemistry of the sugars and, later, a little bit about the chemistry of the endocrine glands and of nutrition. Lead me but a step or two from my narrow pasture, even though you still have me in the field of organic or biological chemistry, and you could readily fool me. As to spiritualistic phenomena, while the lecturer I heard brushed fraud aside with a mere gesture, I have read many books by apparently careful, sincere and honest investigators who declared that it was almost impossible to guard against fraud while the books that I have read on magic continually attest to the great ease with which the very wisest people, including scientists, may be so utterly fooled by shrewd magicians that they will make the most grotesque assertions as their positive beliefs.

The more I think about it the more I am convinced that science is on the wrong track. Its attempt is to be completely impersonal, objective and unprejudiced, yet a man can no more get away from his mental preconceptions than he can get away from gravitation or atmospheric pressure, while his attempt to do this tends to render science as remote from and irrelevant to life as a new system of magic. Scientists should direct their efforts rather to the attempt first to sleuth out their own human prejudices and to make allowances for them. They need to be more human. Then they need to study the reason why people believe what they do and their processes of accumulating knowledge. It is well known that no two people exposed to the same phenomena will ever believe exactly the same about them, yet science tends to proceed in an air tight compartment where the contrary assumption is made or implied.

No two scientists can read the same instrument of refined precision alike. No two can get precisely the same identical results when they perform simple chemical analyses. They know this—they distrust their senses and strive for "true" results by making allowances for innate personal errors and by averaging dozens of results secured by various investigators. Even then it is not uncommon for a

scientist to write in his published paper, "It seems very strange to us that a solution of ecstatic acid should behave so differently in Dr. Blob's laboratory from the way it behaves in ours." The assumption is that Dr. Blob either does not know what he is doing, unavoidably gets wrong results, is simply careless or else too unintelligent to interpret his own data. All this—and yet how easily psychic investigators reach momentous "scientific" conclusions in a field infinitely more complex!

The question science must solve is—why do these same facts, why does this same phenomenon, result in such diverse beliefs? The greatest difficulty all of us have to face is that tendency we all have to believe before the facts justify belief, and to set up a dogma before we know half enough to attempt that. The hardest task we shall have is that of indulging in sufficient self-analysis to smoke out our own wishful desires and to see wherein and how much they motivate our beliefs. These basic human problems science should cease to ignore but attend immediately.

The lecturer I heard was operating in a sphere where I can have no beliefs. If it took me two years to ferret out only in part one very minute fact about the chemistry of milk production in a cow—only to raise more problems in the process than I could solve in ten years more—I am unwilling to believe that any committee of scientists could possibly be justified in making the conclusions the lecturer attributed to them, until they had spent at least two or three hundred years on the investigation. The lecturer remarked that all skeptics became convinced by the phenomena as the years passed and that after twenty years of investigation the most redoubtable of them became firm believers. I may counter this by remarking that after eighteen years' work in the field of a science which is child's play in simplicity compared to psychic research I believe so much less than when I began that I can merely survey the mass of my ignorance in humility and awe. Yet I was surveying a square inch with a microscope while psychic research embraces the universe as its field.

My amazement remains that this hard-headed, intelligent Scottish gentleman I heard speak could possibly believe so much and so easily. I constantly marvel at the ease with which people believe all sorts of things and declare that their beliefs are founded upon science. I certainly have had more experience with science than 90

per cent of them and yet I cannot possibly learn this trick. The more I study science, in fact, the more difficult it becomes for me to be facile in belief.

In his work on *Contemporary Sociological Theories* Sororkin emphasizes the chaotic condition of the social sciences. Odum, in *Man's Quest for Social Guidance* found—with the greatest ease—more than five hundred ideal systems of government carefully embalmed in books and quite consistently irrelevant to the actual problems of human society. So long has it been the custom for a man to believe certain things and then to pull the system out of his head and embalm it in a book as "the principles" of economics, politics or sociology, that consultation with the facts has all but ceased to occur or to be considered necessary. Such people, in common with most writers who claim to base their theories on science, merely pick out facts to support their contentions, ignore inimical facts and send their book or article to print.

Yet it is very apparent that the social sciences, which are in chaos because so many facts still need to be ascertained, are much simpler than the "science" of psychism, which is not only tremendously complex but remains in a rudimentary state. It therefore seems wisest in considering belief to approach something simpler than even the social sciences. I suggest medicine.

Every faith healer and quack produces indubitable effects. From these effects millions of people reason that the therapeutic procedure, which may have been totally irrelevant, was actually causative of renewed health. Actually the simple, unassisted processes of nature may have accomplished what was accomplished, or else the restoration of confidence by some impressive procedure, no matter what, worked organically and chemically according to known natural laws to accomplish healing.

When we enter the portals of orthodox medicine we do not leave this process behind by any means. Consider but one disease which I happen to have studied a little—rickets. In 1892 one doctor considered cod liver oil excellent for rickets, but he was absolutely positive that this was because of its highly digestible and nutritious fat content. In 1897 certain Germans cured case after case of rickets by administering phosphorus. In 1845, however, the disease was known to be caused by impure and damp air and to be cured by eating no starch and dosing up on iron, soda, quinine and port wine.

In 1819 experts declared rickets was far less prevalent than formerly because cold baths for children had become more common.

As late as 1911 rickets was pronounced by one expert to be due to an excessive secretion of the sexual glands of cows giving the milk used by its victims, and could be cured by administering the milk from castrated cows. A little before that electric treatments, medicated baths, iron tonics, the respiration of condensed air, olive oil and dog's milk had all been found remedial, and each physician could present, and did, his group of cases cured by the procedure he recommended.

About 1916 it became evident that a lack of vitamins caused rickets; by 1921 the specific vitamin was located and proven to be present in cod liver oil. About the same time it was found that sunlight, and a little later that ultra violet rays from mercury vapor lamps would cure rickets. Finally it was found that ultra violet rays would turn a certain fat in part into the vitamin required. At all times it is now assumed that calcium, phosphorus and vitamins A and D must be present in proper proportions to prevent rickets, and to insure normal bone building.

At the same time, however, reliable investigators present work which demonstrates that cod liver oil repeatedly fails in the treatment of rickets. Secondly, work is presented to show that cod liver oil often has very poisonous side effects. Thirdly, work is presented to show that the activated fat mentioned above is to be distrusted as it is so concentrated in the vitamin that it may do great harm. Fourthly, work has been presented to show that twins of the same mother on the same breast milk may in one case develop rickets and in the other case be immune. Lastly, one set of investigators has presented apparently incontrovertible evidence to show that cod liver oil in certain dosages causes all sorts of degenerative changes in mice, while another set of investigators, using the same cod liver oil in the same dosages, avers it cannot reproduce the results claimed. So it goes. Had the lecturer had much experience in science I firmly believe that his faculty of belief would have atrophied somewhat!

Bleeding was once a very effective therapeutic procedure. It must have been. All physicians used it and it "cured" their patients. Today it is scarcely ever invoked at all; we are informed that its use is unscientific. Today people become invigorated living in rooms

glazed with an ultra violet ray transmitting glass which will in twenty hours of direct exposure give them less ultra violet irradiation than they would get in five minutes out of doors in direct sunlight; but they feel invigorated and believe in the glass.

Other people are cured of various diseases by the "ultra violet rays" from lamps which actually transmit no such rays at all, but the effects are produced and they believe in the lamps. I can very readily find you just as much apparently sound evidence against as in favor of the theories that autointoxication, bad teeth and infected tonsils cause all manner of diseases, but I know plenty of doctors who believe in these things. They have seen certain effects. They produce their case histories and their clinical pictures. They publish their articles. They and their patients believe. What are you going to do about it? I am sure I don't know, but isn't it interesting?

Turning to natural science, bodies once burned because they contained phlogiston. Now they burn because they contain substances that unite with the oxygen of the air at a fast and furious rate. The burning was the same in both instances but consider the difference in the belief. In the former case bodies should practically disappear when burned for the phlogiston was lost and nothing remained but a little ash. Someone thought to measure and see if everything was destroyed. He found that nothing at all was destroyed in burning and away flew phlogiston into oblivion.

The lecturer I heard told me baffling things. Then he casually explained them. Then he reached final conclusions. Many people tell me astounding things. During late 1928 many people told me perfectly amazing things about one of the candidates for the Presidency of the United States, and, in spite of the fact that their tales so conflicted that they could not possibly all have been true, they believed them implicitly. They had the evidence of their senses. As in the case of Roosevelt years ago, someone had seen someone who saw a big blue glass of what actually was milk go to his dining room and it was at once apparent and quite true that it was whiskey and that he was drunken and debauched!

I do not have to go to politics though. Perfectly astounding things constantly happened to me in the laboratory. I once mixed two sugars together. I dissolved them in water. I added a certain salt known to unite with one of them quantitatively. I then took out the precipitate I got and broke it up and found that sugar there

quantitatively. But the second sugar I never did find. It was not in the original water; it was not in the precipitate. I did this experiment over and over again. I still believe that that sugar did not dematerialize into thin air, but I never found where it went. It is very hard to forestall the formation of a theory in such cases, as our lecturer demonstrated, but I have none.

Here is another case from material science. Proteins are made up of some twenty simpler compounds called amino acids. Milk proteins are so composed. Amino acids circulate in the blood of an animal and one of them is called cystine. Milk is formed in the mammary gland; its proteins are built there from amino acids the gland takes out of the blood. Hence if you could get a sample of a cow's blood before and after it perfused her mammary gland, and could measure the loss in amino acids you could easily calculate which ones, and how much, the gland used to make its proteins. All right. That was once my problem. I wanted to know if a cow used cystine from the blood in manufacturing milk in her mammary gland and, if so, how much.

First I had to have a method of determining the amino acid. I was to do this by the color it produced when mixed with certain chemicals. You clarify and filter the blood, then add a small quantity of it to a solution of four or five chemicals, let it stand and measure the amount of blue color the solution then contains against the color in a solution of known strength. That is a comparatively simple research problem. Now what could I believe?

In the first place every chemical had to be tested; then the effect of every chemical on every other chemical used in the method had to be tested. Then the effects of time of standing and the temperature had to be tested. Then the instrument used to estimate the color had to be standardized. Finally it was found that the color of the solution into which the blood filtrate went never would exactly match the color of the solution containing only the pure amino acid, cystine. Then there was the problem of clarifying that blood—did I lose some of the cystine in clarifying it? If so, how could I tell, since the only way of determining the cystine in blood involved clarification as an initial step?

Ultimately I made an actual test on a milch cow and the blood did seem to lose twenty-five per cent of this amino acid. Cystine apparently went into the gland to make milk protein. I tried a sec-

ond and a third and a fourth cow and each time got lessening amounts of the amino acid disappearing from the blood. I then tried three dry cows which should have given no results at all, as they were not making milk, but they did (two of them) give positive results! And last of all I found that I was not dealing with cystine anyway but with a combination of it with two or maybe three other amino acids and that in that case—if so much disappeared from the blood in one trip through the mammary gland, it was five or six times too much to make the milk the cow was actually giving. Then I started to devise a method of preparing the unknown compound from cow's blood. I spent another year devising that method.

Precisely at that point I ceased laboratory work and began to edit the papers of other scientists for publication. It is now my pleasure to see them contradict each other. I do not for an instant impugn their sincerity. I believe they often honestly believe in their results. They calmly attack each other, show how the earlier workers erred, demonstrate how final their own results are, give their apparently irrefutable proofs and next week some other scientist comes along and contradicts them. Many of them also speak as if they were saying the final word of truth about the proposition and that no more could possibly be learned. They would make good psychic researchers, for remember—immortality is a scientifically established fact according to my lecturer.

But this is not the usual thing. Usually scientists conclude quite tentatively, saying if this and that and the other are so, we may tentatively assume so-and-so. They seem to realize that they may have been tricked by their own prejudices or by the simple recalcitrance of natural facts without deliberately tricking themselves. The difficulties of this sort of thing are not, I am convinced, realized by these careless people who are always remarking, "I will give you the facts and you can see for yourself that the theory I present is scientifically true."

The lecturer I mentioned above had adopted the very subtle method of depending rather upon the final reports of committees of scientists as to the authenticity of psychic phenomena than upon specific case histories. This was accepted by his audience as creditable scientific proof. Yet what did it mean? When a group of men who, we shall assume, have been deceived write up their conclusions in abstract and solemn terms, eliminating all personal and human qualities, the end result is more impressive than plain Bill Jones'

assertion that he saw a ghost or heard a guitar played untouched by human hands. But is it really any more valuable?

For years various scientists in various lands have sought to prove that electricity favorably effects plant growth. An investigator demonstrated, for instance, that potted plants grew more rapidly if the soil in the pot was connected with the earth by a wire; but no other investigator could duplicate his results and that proved to be the case with all similar work.

Finally an investigator in the U. S. Department of Agriculture undertook to see whether weak electric currents would accelerate the growth of maize plants in wooden boxes. He got what was undeniably a positive correlation after a considerable series of experiments, provided the current was applied at night, and would have been perfectly justified in reporting his successful results couched in solemn, objective language. But he was a natural born skeptic, though he figured there was but one chance in a hundred that he was wrong.

The boxes in which he grew his plants had numbers arbitrarily stenciled on them as they were made. He then shifted them about arbitrarily, putting low and high numbered boxes together, whether the plants in them had had electrical treatment or not, and measured the growth of the plants in such groups. To his astonishment he got a still better correlation between this profoundly irrelevant factor and plant growth then between electrical currents and plant growth. He then began to examine the boxes. It ultimately proved that by pure chance the boxes which bore low stencil numbers differed from those that bore high numbers in capacity to retain moisture in the soil inside them.

The boxes were all made of the same wood at the same time, and were of exactly the same size, yet pure chance and an actual difference in the properties of the boxes operated as stated. The scientist after further trials with absolutely comparable boxes, discovered that weak currents of electricity had no accelerating effect on plant growth and so reported.[1] Compare this with the "scientific method"

[1]It is a curious if not a significant fact that the original English investigator whose positive conclusions on the beneficial effects of electricity on the growth of plants moved the Americans to challenge and confute the work, was none other than Sir Oliver Lodge. Sir Oliver was here plainly fooled by material phenomena, however incapable he is of being deluded by super-sensible and intangible psychic phenomena. See "Electric Stimulation of Plant Growth," G. N. Collins, L. H. Flint and J. W. McLane, *Journal of Agricultural Research*, June 1, 1929, 585-600.

of a man who postulates unknown causes and from these an unknown ultimate cause for irrelevant and heterogeneous facts which, it is more than probable, are no more facts than the initial "facts" adduced tentatively by this material scientist to "prove" that weak electric currents would accelerate plant growth.

I who have spent years trying to discover and accurately describe a few unimportant and very illusive little facts in a restricted field of scientific endeavor pause in almost reverential awe before the tremendous scope and power of belief exhibited by such persons as the lecturer I just heard. I think of the extreme care we used in the laboratory, of the very restricted field in which we worked, of the meticulousness with which we tried to examine every microscopic portion of it, of the slowness with which we decided anything, of our extreme reluctance to trust our senses with regard to matters the average person would consider obvious, of the tentativeness of our conclusions, and I am rendered almost aghast at the power the Scot and others show to believe the most extraordinary things and to brush aside possibilities of error with a gesture.

A plausible case could be made out for the idea that science is the process of finding bad evidence to support notions you already have in your head, just as Bradley described metaphysics as the science of finding bad reasons for what you believe on instinct anyway. Many scientists have actually refused point blank even to consider or have explained to them facts which seemed to militate against their set notions—just as Liebig refused to discuss the theory of spontaneous generation, in which he believed, with Pasteur who demolished it. But there is a real and undeniable tendency on the part of all scientists to try to catch themselves rashly believing, to try to trip their theories up, to test all things and hold fast only to that which can withstand the very harshest critical usage they or their colleagues can possibly give it. This is the tendency we need to cultivate more and more but it is extremely difficult to get even a hearing for it so long as the most ridiculously unprovable theories are calmly and casually presented to audiences as "scientifically true" beyond all peradventure.

I could conclude with a painful peroration on what scientific truth really is, but my experience forbids. I might grow facetious. I prefer only to adumbrate what it decidedly is not and to hint that whenever a person warms to his views with affection and begins to

meet opposing ideas with resentment he is no longer receptive to scientific truth. Thus the fact that investigators in psychic research invariably sooner or later become convinced by the "scientific proof" of personal survival after death, as the lecturer held, is, if true, enough to demonstrate that such investigations are open to grave objection. For a scientist never becomes permanently and firmly convinced of anything except the notion that this is a complex universe open to all sorts of misinterpretations. When he makes an absolute dogma even of that notion he loses much of his usefulness, but when he forgets it he is lost to scientific truth. The lecturer asked—"How can you help believing?" I ask continually "How can you believe so much that probably isn't so anyway?" In short, since nature as mere dirt in flower boxes can be so utterly cantankerous as to delude careful investigators, I find it a hundred fold more difficult to believe the esoteric revelations of inspired mystics and their credulous devotees.