ONE IN ALL: ALL IN ONE

By J. J. ASANA
(*Gujarat College, Ahmedabad*)

Religion, the Supreme Need of Our Scientific Age

ONE may feel considerable trepidition in placing before the scientific minded readers of *Current Science* the following speculations but for an equally strong feeling that they may perhaps serve a useful purpose.

This catastrophic war has taught us once again in a very striking manner how irrational and inhuman we are despite our boasted advance in scientific thought and in the application of the findings of science to the affairs of human society. Why is it so? In the analysis of the problem many causes and for its solution many remedies are being suggested. Among various measures proposed for the removal of this most distressing state of things is the reorganisation of all social and political activities on scientific lines. Industries, educational system, social and political relations of mankind, it is being urged, should be recast and remoulded in accordance with scientific methods of enquiry into problems. It seems highly probable that in the world of tomorrow workers in science will be called upon to shoulder heavier responsibilities as citizens than they have borne hitherto not only in the planning and reconstruction of industries and material environment of man but in matters pertaining to human, social relations also.

That the application of scientific methods of enquiry to industrial, economic and social problems will prove fruitful, as it has turned out so profitable in the investigation of natural phenomena, one feels little doubt. That the cold, calculating, dispassionate gaze of science may be relied upon to illuminate the entire range of all the environmental conditions amidst which mankind is living to-day appears to be a sound proposition and likely to yield results of value. But one feels that if we disregard or continue to look upon with more or less indifference, as we have been doing hitherto, all those matters, considerations, human attitudes, which generally go under the headings, 'religion' and 'morality', our scientific endeavours to remedy the existing evils and put things straight may not come up to the expectations that people entertain regarding science as one of the most potent instruments in the fight against evil and for the increase of human welfare.

Obviously one cannot adduce scientific evidence in support of the above-mentioned statement that science is likely to fall short of its expectations. For one thing 'religion', 'morality', 'things of the spirit' are words and expressions lacking in the type of definition and precision of meaning with which students of science are familiar. But since the advent of our scientific age, and as some thoughtful people believe partly because of it, events have happened in human societies, which should give sufficient reason to us, men and women trained in the methods of science, to examine anew our conceptions of religion and morality and all that they signify in the affairs of man.

The agnostic, non-committal attitude of the generality of men of science of the past and the present towards the questions is well known and easily understandable on intellectual grounds. It was and it is to a degree justifiable in view of their avowed profession. But it is conceivable that they may have blundered consciously or unconsciously in extending this agnostic, noncommittal attitude of 'scientific materialism' of the laboratory to the outside, to their philosophy of life and in the world affairs. And it is also conceivable that in view of the increasing prestige of science in the last one or two generations, the repercussions of this indifferent mental attitude towards discussions of religion and morality in the world outside might have been greater than men of science imagine. This attitude, being easier to understand and maintain, might have almost imperceptibly permeated to a considerable extent the minds of the non-scientific intelligentsia all the world over. We are perhaps too near the events to assess rightly to what extent for good or evil, this negative, indifferent attitude towards religion and morality influenced the economic, political and social relations of men during recent times. But there is a considerable body of thoughtful men, including a few professional scientists, who have been saying for the past several years that this indifferent attitude, engendered and fostered by scientific materialism as its philosophy, is not so tenable as it was supposed. And there may be some truth in the indictment that though science indirectly helped to destroy effectively many superstitions and harmful practices going as religion and morality, it may have come in the way of spreading righteousness and goodwill among men by maintaining an indifferent attitude towards religion and thus lessening its emotional drive and influence for the good of mankind fostered by feelings of sacredness and righteousness.

An Idea of God

Recent investigations by several eminent men of science in Physics, Chemistry and Biology have thrown a new light on our conceptions of matter, space and time. Readers of this Journal are all familiar with these remarkable researches taking place on the frontiers of these branches of natural science, bringing their far-flung boundaries closer to one another every day. They all point to a great generalization, which is slowly emerging. That behind this external separateness, at the back of this variety and diversity of phenomena that men of science are studying there lies a basic, fundamental unity, admittedly difficult to conceive and define. Some of these fundamental researches of men of science are highly suggestive. They warrant a justifiable inference that the different phenomena that the biologists, chemists and physicists are investigating in their respective fields may really

be materialized expressions, outward manifestations of some fundamentally unique, still mysterious agency, difficult to grasp intellectually, difficult to put into words and to be communicated, but perhaps lying within the ambit of individual human experience.

One of the basic sciences, a more or less exact science such as Physics, postulates, as we all know, on grounds which are sound and scientific an underlying *'relation'* a sort of *'connection'* between the 'observed' and the 'observer', between the phenomenon and its investigator. It is true that the exact nature of this relation at present eludes us. But bearing in mind these scientific considerations would it be too big a jump, even on intellectual grounds, shall we be accused of forsaking reason, if we infer that the observed and the observer, the experienced and the experiencer are so-called material expressions, the manifestations of some agency, fundamentally unique, whose creations they are?

This 'One' in all may conceivably serve us as our conception of God, even as a hypothesis to be experienced and realized, God in Whom the ideas 'I' and *'not-I'* or *'the other'*, the idea of *'self'* and *'not self'* lose their separateness and distinction and merge into 'One'.

If our fellow-workers in science, at least in India, can feel no intellectual compunction to subscribe to such ideas, they will only be paying well-merited homage to those great thinkers of our ancient land whose magnificent efforts had almost reached the farthest limits of human intellect and will.

Mind, Spirit, Soul

That these terms and the conceptions they engender lack definition and precision of scientific terminology and thought is a matter of common knowledge. How inadequately they have been defined and explained in other words in standard dictionaries can be easily ascertained. And yet it is equally well known what an important part human activities associated with these words have played in the career of man on this planet. Students of science of course know this. But as regards the existence and nature of mind are not our views coloured by scientific materialism? If one mistakes not, orthodox science believes that mind can only exist in association with animal body, being an integrated function of a system of organs, the nervous system. Science is not prepared to give any countenance to the statement that mind activities normally associated with a living human body may be manifested otherwise.

But in view of some experimental work which is being carried out on truly scientific lines of telepathy and clairvoyance, under the general name Extra Sensory Perception (E.S.P.), and on telekinesis, etc., at Duke University, North Carolina, U.S.A., by J. B. Rhine and his associates[1] and also in Great Britain[2] we may have to revise some of our ideas regarding mind. This kind of work on scientific lines lends support to some of the most remarkable findings recorded in the *Proceedings of the Society for Psychical Research (London)*, and to the pronouncements and opinions of eminent philosophers and writers like Professor B. L. Atreya[3] and Professor C. L. Reiser[4], and Pandit D. V. Gundappa[5]. In this connection it is also interesting to quote the great historian of science, Charles Singer[6]. At the end of the last paragraph concluding his book, he says: "Notably it seems probable that the conceptions of the separation of mind from mind and of mind from matter may need modification. There are many indications that the tendencies of science since the later nineteenth century have been working in these directions."

Religion as the Basis of Morality

Attempts are being made to define moral and immoral acts and find justification and sanction for morality on intellectual grounds and on the findings of science. That it is difficult to divorce morality from intellect and reason, which science constantly uses, will be granted at once. Few will dispute that knowledge is necessary to calculate and weigh the consequences of our acts and to arrive at judgments. As scientific knowledge of the conditions amidst which men behave is reliable, science can help in this direction.

But is it all a matter of knowledge, of scientific knowledge? Do people always act in the way of what they call morality by weighing the consequences of their acts? What of the behaviour of large masses of people, for instance in England and Russia, in times of crisis, which change the course of history, such as the present war? May we ask, whether material considerations alone sustained some of these people in their darkest hour and made them put forth their mightiest effort when unheard of destruction, total defeat and disaster were staring them in the face. It is probable that many of them, if not all, *felt* that a certain course of action on the part of a nation, as in the case of an individual was *implicitly* unrighteous and immoral, and they reacted. It is conceivable that reason and weighing of consequences alone could not have driven many of them to make the supreme sacrifice. The righteous resolve may have been engendered by *feeling* and sustained by *faith*. They felt and experienced certain values. It seems then that feeling and faith may yet be counting a great deal in the affairs of morality.

But it may be asked where comes in religion here, which has been such a fruitful source of misunderstanding and disharmony among men. Could not all that has been said above go under 'Scientific Humanism'?

One feels that a good reason may be given for putting the new wine—the scientific understanding of man, nature and God—in the old bottle, religion. Common people, educated, but not well versed in the way science tackles problems, will feel heartened when they are told that in matters of morality, which are intimately connected with religion as it is understood by ordinary people, science is not in a position to put *feelings* and *faith* out of court altogether. The statement that intellectual considerations alone do not induce men to perform moral acts will strengthen the faith of the common men in many of the sayings of the great prophets and seers with which science can have no quarrel,

And we, students of science, on our part lose nothing; we shall not be committing any intellectual 'Harakari' if we grant the hypothesis that those great prophets and seers had seen farther in their own way in these matters of religion and morality. As regards their conception of God it is conceivable that they may have felt more intensely the presence of some unique agency, the unity underlying the diversity of phenomena, that men of science are unravelling to-day. They have proclaimed in no uncertain terms that man can aspire to realize 'One' in all. They saw the same face in the myriads of faces animate and inanimate.

And finally, it may be that the great justification of science, the true philosophy, is yet to come. The present-day scientist, the devotee of the external, soul bewildering frills and frescoes of the outer temple may some day find unimaginable peace and harmony by withdrawing in the inner temple of the soul where all is one, heartily subscribing to the truth and utility of the profound adage, 'Do unto others as you would have them do to you'.

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1. " Address, the Parapsychology Laboratory, College Station, Durham, North Carolina, U.S.A.," *The Journal of Parapsychology*. 2. Soal, S. G., & Goldney, K. M., " Experiments in Precognitive Telepathy," *Proceedings of the Society for Psychical Research*, Parts 1 and 2, December 1943. Review in *Nature*, No. 3880 of 11th March 1944, by E. J. Dingwall. 3. Atreya, B. L., " Supernormal Factors in Human Personality," Presidential Address(Section of Psychology and Educational Science), 30th Indian Science Congress, Calcutta," 1943. 4. Oliver L. Reiser, " Humanism and the World Mind," *The South Atlantic Quarterly*, 1939, **38**, No. 2, April. 5. (*a*) Gundappa, D. V., " Science and Ethics," *Current Science*, December 1941, **10**, No. 12; (*b*) Gundappa, D. V., " Towards a New World Order, An Indian View," An Address delivered to the Joint Easter Session of Science Associations in Bangalore, India, April 1942. 6. *A Short History of Science to the Nineteenth Century*, 1941. (Charles Singer, Publ. Oxford, at the Clarendon Press.)

THE APPLICATION OF INFRA-RED SPECTRA TO CHEMICAL PROBLEMS*

APPLICATIONS of spectroscopy in different directions have been the subject of so many conferences on the subject that Professor Mulliken in opening the conference on spectroscopy in 1942 remarked, "Less attention has been given lately to spectroscopy as a pure science ..... It seems to us that the pure science aspects of spectroscopy deserved new emphasis." In the case of infra-red spectroscopy, however, difficulties confronting the investigator have been such that the number of votaries have been relatively small and the report under review represents one of the few conferences that have been specially devoted to this part of the subject. The collection of papers here constitutes a welcome report of the present position of the subject, though it represents essentially the contributions of the British school of workers from Oxford and Cambridge, an isolation presumably due to the difficulties of war time.

As one peruses the different papers, Professor Rideal's introductory remark, "It is one of the difficulties inherent in war-time that the Secrecy Act intervenes with different degrees of rigour in the various nations. Here, in this country much work in the field of infra-red spectroscopy has still to be withheld from publication. Our Trans-Atlantic cousins are more fortunate in this respect" constantly occurs to one's mind and it is to be hoped that the Faraday Society will soon have a fuller discussion on the subject.

The report falls naturally into two divisions, the first part dealing with experimental technique and the second with applications to different chemical problems. A brief review by Drs. Sutherland and Thompson on recent developments and present position of spectrometers, optical systems, calibration, detection and recording of infra-red spectra begins the series. This is followed by a useful note on sources of radiation and the preparation of absorption cells and another on accurate measurement of cell thickness. The very brief contribution on solvents gives no doubt valuable information but one cannot help commenting on its laconic character. The time-saving device described by Willis and Philpotts for making hand-operated spectrometers automatic and Dr. Conn's Thermocouple Bolometer detector fill an important need and the increased speed for a given sensitivity should remove one of the disadvantages of infra-red and lead to a larger volume of work.

The greater part of the discussion is devoted to the second section referred to earlier. The value of infra-red spectra lies in the principle that except optical isomers, no two molecules can have an identical array of frequencies and the improved techniques have made it speedier. The principal obstacles in the way have been the difficulties in detecting, recording and computing accurately. An introductory note discussing these is followed by examples of typical analyses of closely related organic compounds, usually of common occurrence, and the report presented bears out clearly the advantanges of this tool.

A critical analysis of available experimental evidence leads Dr. Simpson to a new assignment of the fundamental frequencies of the ozone molecule. While due note is taken in making the assignments of the contour relationships, intensities, and probable values of the force constants, both the paper and the discussion thereon point to the necessity of reinvestigation of both electron diffraction and infra-red results. The paucity of the Raman

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* *Transactions of the Faraday Society*, 1945, **41**, 171-297. Report of a discussion held on 2nd January-1945. Price 15*s*. (Messrs. Gurney & Jackoon, London.)