

The
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Devoted to the Science of Religion,
the Religion of Science, and the Extension
of the Religious Parliament Idea

FOUNDED BY EDWARD C. HEGELER

JUNE 1928

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VOLUME XLII NUMBER 865

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MEDICINE MAN AND HIS WIFE
(T. Whiffen: "North-West Amazons," Constable.)

THE OPEN COURT

Volume XLII (No. 6)

JUNE, 1928

Number 865

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Published monthly by
THE OPEN COURT PUBLISHING COMPANY

337 East Chicago Avenue
Chicago, Illinois

Subscription rates: \$2.00 a year; 20c a copy. Remittances may be made by personal checks, drafts, post-office or express money orders, payable to the Open Court Publishing Company, Chicago.

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Address all correspondence to the Open Court Publishing Company, 337 East Chicago Ave., Chicago.

Entered as Second-Class matter March 26, 1897, at the Post Office at Chicago, Illinois, under Act of March 3, 1879.

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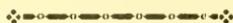
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A MONTHLY MAGAZINE

Devoted to the Science of Religion, the Religion of Science, and
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Volume XLII (No. 6)

JUNE, 1928

Number 865

THE PSYCHOLOGY OF THE MEDICINE MAN

BY WILFRID D. HAMBLBY

FIELD MUSEUM, CHICAGO.

A STUDY of the medicine man may profitably be approached from three main points of view, the historical, the sociological, and the psychological, though no claim can be made that these are mutually exclusive aspects.

On the historical side we have a glimpse of origins in reading that a very primitive people like the Tasmanians had no medicine men or priests, though some people more than others practised magic.¹ There are likely to have been in prehistoric societies a few persons who above all others were gifted with quick and accurate powers of observation with regard to local weather conditions, especially as these affected food supply. Judging from prehistoric cave paintings in Europe and South Africa there may have been magical rites connected with food supply in very remote times. Some of the South African cave paintings show masked human beings in dancing postures, while in seventeen caves there is a picture of a horned snake whose symbolism has not been interpreted.² The mantis, a creature associated with grass and water by Bushmen and Hottentots, is a recurrent figure in these early paintings; moreover, the creature is a present-day element in folklore stories of past heroes.

Landtmann would have us believe that priesthood, broadly speaking, owes its origin to the universal need felt by mankind for super-human assistance in the struggle for life."³ True as this may be in a general way, the statement hardly does justice to an immeasurably

¹ Ling-Roth, *Aborigines of Tasmania*, Halifax, 1899, p. 65.

² Jones Neville, *The Stoneage in Rhodesia*, Oxford, 1926, p. 104.

³ Landtmann G, *The Origin of Priesthood*, Finland, 1905, p. 22.

long period of what was probably spontaneous and unpremeditated development. Historically it is known that in early dynastic times in Egypt there were co-existing systems; the one religious with well defined ideas of life beyond death, standards of conduct and deities; while the other was a code of formulae for dealing with sickness, the evil eye and repulsion of demons. In spite of the claims which have been made for Egypt as the original home of magic and religion; it is perhaps nearer the truth to say, that in Egypt the historian sees for the first time, how the magical rites and vague religious ideas of prehistoric man, could be welded into a dynamic system.

A problem no less important to the historian than to the sociologist is the possible relationship in time and function of a hierarchy of gods, kings, priests, priestesses, leaders of secret societies and medicine men of graded prestige. Isolation, hardships, instruction, taboos, change of name and reintroduction into society are fundamental points. This statement is not, however, intended to imply that the hierarchy is found in any one social unit, and the question of chronological and spatial relationships of types of initiation is at present undetermined. If the historical method is found too tedious there is an alternative.

The investigator may assume that the stratification of human minds, likewise the exigencies of growing societies, are such as to lead to the adoption of one or more factors of the hierarchy. It is also a labour saving device to postulate that the common sense of those societies which adopt one or more forms of initiation will choose the constantly recurring factors of isolation, hardships, taboos, acquisition of power, renaming and ceremonial rebirth, as the best means of launching out into a new career as chief, priest, member of a secret society or ordinary tribal member.

The title of this paper involves the preliminary difficulty of defining the term medicine man. Although a definition which shall meet the requirements of logic is difficult to formulate, there is, in the consideration of a definite geographical area, some facility in drawing lines of demarcation between the offices of priest, a chief officiating as priest, and a medicine man.

In the Bamun area of the central region of Cameroon, the chief periodically officiates as high priest in a ceremony known as "Feeding the ghost" of a deceased chief.⁴ When using the fetish horn,

⁴ Malcolm L. W. G. J1. *R1. Anth. Inst.*, London, 1925, p. 273.

and while twirling his staff in a ceremonial dance, also when addressing the ghost, the chief is for the moment acting as a medicine man, but the change of office is temporary, and therefore gives rise to no confusion of classification. Similar rites are carried out in Ashanti, where the reigning chief pours the blood of goats over the carved wooden stools of his ancestors.⁵ The Dahomeyans⁶ had a priesthood connected with the worship of pythons, and similar cults with their attendant priests exist in Nigeria today.⁷ These offices are distinct from those of medicine men. When, on the contrary, consideration is given to the function of chief, rainmaker, and medicine man among the Nilotic Negroes, as for example Dinkas and Shilluks,⁸ distinctions of office are made with less facility. Apparently a chief in this area is always a rain maker, while after death tribal tradition tends to ascribe to him supernatural power. With regard to North America, Whissler⁹ says that among Pawnee, Ojibwa, Navajo, and Apache, there is a fairly clear distinction between priests and medicine men; but with the Shoshoni the line of cleavage is less clearly defined, and in central California the disparity vanishes.

The call to the profession of medicine man, also the acquisition and use of power are of special interest in relation to the modern study of morbid mental conditions. The chief points of interest are epilepsy, healing by suggestion, local anaesthesia, dual personality, and color symbolism. The last named point bears on unsolved problems relating to the excitation of the retina by colors and the resultant emotional states.

A psychological phenomenon which relates exclusively to the inception of medicine men is the "call" to the profession. The call occurs usually at puberty when the emotions are unstable, and this inward and sometimes unwelcome invitation, is experienced only by novices of a particular physical constitution, wherein nervous excitability is prominent. The hereditary nature of the medicine man's office is perhaps due, not so much to a conscious arrangement for preserving social distinction, as to an unconscious appreciation of the fact, that the attributes of memory, observational power,

⁵ Rattray R. S., *Ashanti*, Oxford, 1925, p. 94.

⁶ Skertchly J. A., *Dahomey as It Is*, London, 1874, p. 54, 466.

⁷ Leonard A. G., *The Lower Niger and Its Tribes*, London, 1906, p. 328.

⁸ Seligman C. G., *Jl. Rl. Anth. Inst.*, London, Vol. 55, 1925, p. 15.

⁹ Wissler C., *The American Indian*, New York, 1922.

dominating personality, hysteria, and epilepsy are of an hereditary nature.

Evidence respecting shamans of Siberia illustrates the importance of the call. Jochelson¹⁰ makes clear that the novice is bidden by an inner voice to enter the profession. A young Yakut stated that for nine years he struggled with himself during which time he could see and hear things that were not recognized by ordinary people. Many traditions relate to the vengeance of spirits whose call had not been obeyed. Among Tungus a dead shaman appears in the dream of a novice commanding the boy to become his successor.¹¹ Altains believe that no one becomes a shaman of his own free will; it is said that the ancestor spirit leaps upon him, issues commands, and strangles him in case of resistance.¹² Bogoras¹³ states that some young men so fear the call that they prefer death to resistance. A youth of the Gilyak tribe fell into a trance in which a bird spirit said: "Make yourself a drum and all that pertains to a shaman."¹⁴ Sternberg gives a further account of a boy Koinit, twelve years of age, who fell into a deep sleep in which the spirits said: "We used to play with your father, let us play with you also."¹⁵

The subject of arctic hysteria and shamanising is in some of its aspects incomparable with similar practices in other parts of the world. But instances of a call are to be found in regions unaffected by the phenomena described.

The Akikuyu say that the medicine man becomes such in response to a direct call. This is frequently given in the form of an illness during which the boy sees and hears things that indicate his latent power as a witch doctor. The call may take the form of a dream in which the novice sees people bringing a goat to him for sacrifice.¹⁶ The Akikuyu say, "God chooses but the father must train the novice." The Ba Thonga of Portuguese East Africa believe that a man must be induced by his heart to enter the profession

¹⁰ Jochelson W. I., "The Koryak," *Rep. Jesup, Exp., N. W. Pacific*, N. Y., 1908.

¹¹ Czaplicka M. A., *Aboriginal Siberia*, Oxford, 1914.

¹² Wierbicki L., *The Natives of the Altai*, 1893, p. 44.

¹³ Bogoras W., *The Chukchi, Irkutsk*, 1899 and *Rep. Jesup, Exp., N. W. Pacific*, Am. Mus. Nat. Hist., N. Y., 1908, p. 421.

¹⁴ Sternberg L., *The Gilyak*, Moscow, 1893, p. 72-4.

¹⁵ *Ibid*, p. 72.

¹⁶ Routledge W. S., *With a Prehistoric People*, London, 1910, p. 251.

of medicine man.¹⁷ Kingsley¹⁸ states that the call of a boy to the witch doctor's profession takes the form of seeing spirits during initiation to a secret society. The Wiradjuri boy said that he could see things his mother could not see, after some training by his father. "It was after that I used to see things my mother could not see—she used to say child there is nothing; these were the ghosts I began to see."

Occurrence of epilepsy among medicine men is of interest because the disease is today little understood in modern therapy. Medical men classify epilepsy among the explosive diseases. Laminal, a synthetic drug, and bromine, are used as palliatives. Brains of epileptics show no anatomical differences when compared with the brains of normal people. Epilepsy is not necessarily accompanied by any other mental defect, though later in life dementia is likely to set in. The disease is probably due to a disturbed metabolism, and a vigorous outdoor life is beneficial.

The shamans agree that violent dancing improves their condition, and Tremearne,¹⁹ in *The Ban of the Bori*, describes a Nigerian curative system of dancing for improving the condition of epileptics. This therapeutic dancing is not, however, connected with the preparation of men for the office of medicine men.

Czaplicka²⁰ has well summarised the evidence respecting epilepsy and shamanism in arctic regions. Kingsley²¹ states, for parts of West Africa she visited, that if the novice can acquire a showy way of having imitation epileptic fits so much the better his qualifications for the office of witch doctor." Among the Arunta²² the novice should be silent, reserved, and of neurotic temperament, Bogoras²³ in describing the appearance of a shaman has given an account which is probably applicable to a great number of medicine men, irrespective of geographical area. "The typical medicine man is silent, reserved, even morose; he has peculiar restless eyes in which the glint of madness is discernable, and at all times he is a sensitive man, that is he appreciates quickly any change in the psychic atmosphere."

¹⁷ Junod H., *Life of a South African Tribe*, Neuchatel, 1912, vol. 12, p. 414.

¹⁸ Kingsley M., *West Africa Studies*, London, 1901, p. 181.

¹⁹ Tremearne A. J. N., *The Ban of the Bori*, London, 1914, and *Tailed Head Hunters of Nigeria*, London, 1912, p. 254-262.

²⁰ Czaplicka M., *Aboriginal Siberia*, Oxford, 1914.

²¹ Ref.: 18.

²² Spencer B. and Gillen F. J., *Across Australia*, London, 1912, Vol. 2, p. 336.

²³ Bogoras W., *The Chukchi*, p. 417.

From the observations of Im Thurn in 1883, and Whiffen in 1915, epilepsy is a recommendation for the office of medicine man among some tribes of the North West Amazon region. For this region it is stated that the medicine man may take the form of a puma for short periods during his life, while after death he may be reincarnated in that animal. On this account hairy boys are preferred for the office of medicine man.²⁴

Although the peculiar neurotic condition of the novice and the nature of the call present a difficult problem, there is evidence to warrant the inclusion of the medicine man with those psychoneurotic cases that have formed a subject of discussion for Rivers,²⁵ Coriat,²⁶ Freud,²⁷ Crichton-Miller,²⁸ Binet,²⁹ and Morton Prince.³⁰ Constant striving and inhibition create a complex which Hart describes as an "emotionally toned system of ideas," to which Rivers attributes a definite pathological implication, for he says "The complex is not only the result of suppression but is a product of the independent activity of the suppressed content." Freud has stressed the importance of sex instincts and their repression in relation to a neurotic condition. The novice becomes ill about the time of puberty when strong incipient sex instincts are no doubt in conflict with denials demanded by the call, with its attendant solitudes and privations. Although it is clear that a rigid system of taboos is likely to affect adversely the condition of an abnormal boy, there is no doubt that the existence of a fear neurosis, such as Rivers explains in describing the effects of war strain, in his book *Instinct and the Unconscious*, is largely responsible for the novice's neurotic condition.

The hysteria and anaesthesia of the shaman are explicable in the light of a fear neurosis, for Rivers states, after examination of many invalided soldiers, that hysteria may be regarded as a solution of the conflict between instinctive tendencies and controlling forces. Anaesthesia is one of the most frequent accompaniments of suppression and is often found in conjunction with hysteria which is primarily due to conflict between a danger instinct and discipline.

²⁴ Whiffen T., *The North West Amazons*, London, 1915, p. 181, and *Im Thurn Sir Everard, Among The Indians of Guiana*, London, 1893, p. 335.

²⁵ Rivers W. H. R., *Instinct and The Unconscious*, Cambridge, 1922.

²⁶ Coriat I. H., *Repressed Emotions*, London, 1910.

²⁷ Freud S., *Totem and Taboo*, 1919.

²⁸ Crichton-Miller, *The New Psychology and The Teacher*, London, 1922.

²⁹ Binet A., *Double Personality*, London, 1900.

³⁰ Prince M., *Dissociation of Personality*, N. Y., 1906.

Under aggravating conditions which include fear of the spirits who issue the call, together with repressions and privations of various kinds, the condition is evidently favourable for the formation of a dual personality by a process known to psychologists as "splitting of the stream of consciousness." There is evidence to show that the medicine man may have this twofold aspect of his psychic life.

The following instances of a transfer of power show some analogy among the usages relating to the offices of medicine men, priests, and kings.

Hocart³¹ has summarised facts relating to the installation of chiefs in Fiji. The new chief is nursed during four nights in the lap of the elders who do not allow his feet to touch the ground. The nursing ceremony is typical of death and rebirth, during which the chief acquires a peculiar power. W. Ellis³² records instances of the transfer of power from gods to inanimate objects which were kept inside them before being distributed to the worshippers, while new gods were placed in contact with old so that the necessary transfer of power might take place. Codrington³³ observes that at Saa the son of a chief had to undergo an initiation of more than ordinary severity, the ceremonies being extended until the boy acquired a power known as Saka. Wallace Budge³⁴ explains that kings of Egypt on account of their divine descent had a peculiar power described by the words "Sa-en-ankh" obtained from Ra before birth. Each day the king brought himself into physical contact with an image of Ra, so justifying his kingly title "Endowed with life like Ra for ever." Transfer of power might in Egypt take place by ceremonial cannibalism for the text reads—"He has taken the heart of the gods, he has swallowed the knowledge of every god, their charms are in his belly."

A novice of the Veddas of Ceylon acquires his power when an elderly medicine man introduces him to the Yaku or spirits; to these an apology is made saying—"Take no offence I am bringing a pupil of the mind."³⁵

Arunta men are graded in power according to the degree and type of initiation experienced. Novices of class one the *Irunterinia*

³¹ Hocart H. M., *Ceylon Journal of Science*, July, 1924, p. 27.

³² Ellis W., *Polynesian Researches*, London, 1834, vol. 1, p. 339-342.

³³ Codrington R. H., *The Melanesians*, Oxford, 1891, p. 233.

³⁴ Budge W. E. A., *Osiris and the Egyptian Resurrection*, N. Y., 1911, vol. 2, 273, and *Guide Egypt. Coll.*, Brit. Mus., p. 79, 117.

³⁵ Seligman C. G., *The Veddas of Ceylon*, Cambridge, 1911, p. 129.

sleep in caves inhabited by these spirits who communicate their power by launching darts into the bodies of the candidates. The hole in the medicine man's tongue is also the work of spirits. Among many instances of body marks symbolising the acquisition of power is the mediaeval use of tattooed designs by witches who called these "the devils marks."³⁶ An instance of the transfer of power in ordinary tribal initiation is provided by Australian aborigines near the Upper Finke River. The instructors project crystals into the boys from a distance, and the novices, while some distance from their tutors go through the movements of hauling in a rope.³⁷ ³⁸ The arctic tutors transfer power by blowing onto the eyes of the novice or stabbing him with a knife with which they previously stabbed themselves.³⁹

The question of conscious charlatanism of the medicine man has often been raised. In general the power is seriously regarded. Spencer and Gillen⁴⁰ record that a wizard when demonstrating, thought that the pointing stick had entered his own head and became seriously ill. Another practitioner lost his power after drinking hot tea because hot drinks were taboo to him. Any medicine man who loses the power of bringing up crystals retires from the profession.⁴¹ The annual Ba Thonga festival for the renewal of the power of drugs further illustrates belief in the dependance of the healing art on non-material power.⁴² The Ba Thonga have a system of grading their medicine men according to power. Medicine men who treat leprosy belong to the highest grade of their profession, while those who specialize in purification ceremonies after twin births are likewise of importance.⁴³ Only within recent times has the value of suggestion in therapy been discussed and used. Hypnosis has been used in treatment of mental cases, also in place of anaesthetics in surgical operations. Healing by suggestion is fundamental to the art of one primitive practitioner.

During the period 1914-1919 a number of experiments were made in relation to the effect of color in relieving cases of dis-

³⁶ Murray M., *Man*, 1918, No. 81.

³⁷ Ref. : 22, p. 337.

³⁸ DO and Howitt W., *Native Tribes of South East Australia*, London, 1904, p. 535.

³⁹ Byclayewski I., *A Journey to the Glacial Sea*, Moscow, 1883, p. 113.

⁴⁰ Ref. : 22, vol. 2, p. 326.

⁴¹ *Ibid*, p. 336.

⁴² Ref. : 17, vol. 2, p. 415.

⁴³ *Ibid*, p. 394.

ordered mentality. For an unknown time the medicine man has anticipated these modern experiments by associating colors with mental states. A. R. Brown, influenced no doubt by his observations in the Andaman Islands, where color symbolism is elaborate, thinks that painting, though now tending to mere formality, has had a genuine psychological function in keeping alive ideas and sentiments. Karsten is similarly impressed with regard to certain tribes of South America.

Mocking shamans whose function is anti-social wear black coats, while the well-minded shamans have a distinctive red coat.⁴⁴ The wind maker of Torres Strait, in order to invite a breeze which shall take the canoes seaward for fishing, smears himself with red ochre and beckons the wind toward him. If payment is deemed insufficient he changes his red covering for black, and so prepared drives the wind in a direction unfavorable for the fishermen.⁴⁵ Among North American Indians color symbolism has been well elaborated.⁴⁶ Apart from a very wide association of red with symbols of life and magical power, and a frequent use of black to symbolise anti-social practices, there does not appear to be any very extensive association of a particular color with a definite emotional state.

In connection with the psychology of the medicine man the following points are of primary interest:

- (1) The possible historical and topographical connection between initiation of medicine men and other forms of inception.
- (2) The nature of the "call" in terms of modern psycho-therapy.
- (3) The transfer of power.
- (4) Problems of healing and cursing by suggestion. Trance vision. Anaesthesia. Dual personality. Neuroses resulting from suppression and conflict. Color symbolism in magic.
- (5) The relative importance of medicine men and medicine women. McClintock describes the importance of the medicine woman who helps her husband in the Blackfeet tribe,⁴⁷ Whiffen⁴⁸ has a good illustration of a medicine man and his wife, both of whom are ceremonially attired, among Indians of Guiana.⁴⁸

⁴⁴Ref.: 11, p. 192.

⁴⁵ *Rep. Camb. Exp. Torres Strait*, 1898, vol. 5, p. 351.

⁴⁶ *Rep. Am. Bur. Eth.* 7th Rep., p. 342, and Rep. 1900-1, p. 222-33.

⁴⁷ McClintock W., *The Old North Trail*, London, 1910, p. 248.

⁴⁸ Ref.: 24, Whiffen, p. and Im Thurn, p. 337.

The witch woman is important in Africa, so also are priestesses.

- (6) Bogoras⁴⁹ mentions among the Chukchi a transformed shaman, a man of simpering appearance who attaches himself to a male shaman. These transformed shamans are credited with a power transcending that of the ordinary male shaman. This observation raises the question of homosexuality among shamans.

⁴⁹ Ref.: 13.

THE SIGNIFICANCE OF JOHN DEWEY FOR RELIGIOUS INTERPRETATION

BY ROYAL G. HALL

NO single individual is as important as John Dewey in determining the trend of present day religious thinking. Dewey, to be sure, has only incidentally referred to religion as such in his writings, but he has expressed more than any one else the social interest and the cultural drive which underlie many of the new attempts at religious interpretation. In a remarkable way, he seems to focus the moving forces of the day and thus to give invaluable insight which may aid in the development of a vital religion that shall be genuinely integrated into the culture of the time. A study of Dewey and of his writings constitutes probably the best prolegomena to any religious advance founded on the belief that the vitality of religious faith is in direct proportion to its ability to shape itself in response to the "social mind" of the time. This study will have as its purpose then, not so much a technical statement of the Dewey philosophy as an effort to show its relation to the cultural trend of the present day.

Dewey's work has been done in a period in which tremendous changes have taken place. Within his life time America has changed from a rural and small scale manufacturing nation into one of the great capitalistic industrial countries of the world. The year of his birth saw the publication of Darwin's *Origin of Species*, and every year since has seen the advancement of concrete application of the evolutionary hypothesis over wider and wider aspects of the world. The democratic movement, forced into wider channels by the new and dominating industrialism, has become, within the same span of time, something more than a mere political arrangement; it has become a social philosophy voicing new attitudes and calling

for new interpretations of life. Evolutionary science, the new industrialism, the modern movement of democracy—these are the factors which have proved germinal in Dewey's life and thought. These factors have set his problems and furnished the material for his interest and for his thinking. These, it should be noted in passing, are likewise the factors which have proved most potent in disintegrating the traditional social background under which developed our inherited religious dogmas. One of the most fruitful approaches to the thinking of Dewey in relation to religion may be found as we take up each of these factors and show how it has worked itself out in his philosophy.

I

Darwin little realized, we surmise, the importance of the evolutionary hypothesis which he had developed in the *Origin of Species*. Today many are seeing how revolutionary and epochal were the implications of his work. "Darwin", says Dewey, "conquered the phenomenon of life for the principle of transition." The thinking of Dewey is built around this fact with the result that the fixed, the final, the transcendent disappear in his thinking and in their place we have the emphasis upon the changing, the concrete, the "natural" elements of the world. This thoroughgoing acceptance of the genetic standpoint of evolutionary science has important results for Dewey. It furnishes one of the keys for the interpretation of all his philosophy.

Man, his institutions, his moral codes, his beliefs and his values are all seen in a new light when they are placed in the evolutionary process and their genetic development traced. Thinking itself is given an interpretation in terms of its biological development. Its function and place is no longer that represented by the older philosophies. Thinking is not a means for arriving at objective finalities. It is a secondary process and functional to the activity of the organism. Thinking is a means of adjustment; an instrument for ongoing processes of life. This naturalistic interpretation of thinking, so fundamental to pragmatism, cuts under or "short circuits" the traditional theories of knowledge upon which the classical philosophies were constructed. Traditional idealism, for example, interprets the world by the laws of consciousness. The universe becomes a system of ideas from which you arrive at the conception

of an Absolute Spirit or Intelligence that constitutes the system. Dewey's instrumentalism eliminates the necessity of any such system; with him thinking is never general but always concrete, experimental, practical. Neither can it by its very nature give any final results or absolute values or have anything to say as regards any transcendent or supernatural world. Thinking is empirical, concrete, instrumental; arising in the evolutionary process to bring adjustment between the organism and its environment.

This naturalistic interpretation of thinking means that for Dewey truth becomes a relative and experimental matter; something formed in the actual social process itself. Thus the experimental logic which he develops makes no pretensions of dealing with the ultimate nature of things, of giving certainties or finalities. The evolutionary study of morality and ethics has also reinforced the conception of truth which Dewey holds. Moral values, genetically studied, are not easily acknowledged as final things given to man and eternally valid. When their origin is traced out their absolute-ness disappears; for they are recognized as rooted in the social process and growing and developing with the changing culture of a people. Hence Dewey's insistence that moral judgments are not absolute principles to be held as universally valid but hypotheses for experimentation. This experimental ethics and its implications mean a radical change when it is applied to the religious program. Religion has contended that its values are authoritative, absolute and final. Religion in the minds of most people is so tied up to such conceptions that they are unable to conceive of it under any other form. Religion as interpreted however from the insight which Dewey affords is a human social construct; its values and beliefs are relative to the social culture which produced them and it carries no super-empirical authority.

II

Modern industrialism is the second creative factor that has strongly influenced Dewey. The new industrialism, really a product of the scientific development of the age, is the factor that has most changed the world in his life time. It has created conditions which have changed the actual social relations and environments of men and thus indirectly developed new values, attitudes, interests and

tasks. Dewey is very cognizant of this fact and it is apparent in all his writings.

Dewey, as we have indicated, is not interested in a philosophy that is seeking final truths or ultimate realities but rather is interested in a philosophy as a way of life—as furnishing guidance to secure practical control over the world of material things in the interest of the best possible life for all men. That interest has in part, we may be sure, arisen out of the practical situation resulting from applied science in the field of industrial development. Modern civilization is what it is because of the control of the physical forces of the world. Through their subjugation and the resultant development of industrialism, wealth and quantity production have been made possible. Such material control has for the first time made possible the opportunity of a decent life for all men. This power which we have attained in the material realm of life augurs even greater possibilities in the future. Yet everywhere there is the haunting fear that all is not well. With all the possibilities it affords, the great industrialism has made poverty for many, has produced social discord and war. The last decade has startled multitudes into the realization that possibly mankind had in the process of its material achievements released forces which might prove beyond its control. The application of intelligence, so evident in the realm of material forces, is lacking in moral and social life. Social life is still proceeding on cult values, social platitudes and traditional habits to such an extent that many feel we are in acute danger of catastrophe. No writer is more cognizant of this danger than Dewey. Hence his practical interest in a philosophy that shall furnish intelligent guidance for the social life of mankind. Dewey has felt on every hand the result of man's intelligent control over his physical environment. As he says, in *Psychology and Social Practice*:

Man has come to recognize that the existing order is determined neither by fate nor by chance, but is based on law and order, on a system of existing stimuli and modes of reaction, through knowledge of which he can modify the practical outcome. We can anticipate with the application of the scientific method no other outcome than increased control in the ethical sphere—the nature and extent of which can be best judged by considering the revolution that has taken place in the control of physical nature through a knowledge of her order.¹

Dewey pleads that the same study, foresight and planning be applied to human relations that we have applied to physical nature.

¹ Page 39.

While his philosophy is by no means devoid of epistemological and metaphysical interest yet those interests are secondary to that in philosophy as a way of life. No American thinker has made a greater contribution than has Dewey to the actual development of practical technique for achieving human betterment. His books on education, ethics and in recent years his numerous articles on current issues all witness to that social interest. That interest has come out of the actual needs of a civilization built on a control through intelligence of its physical order but endangered by lack of that same control in its social and moral life.

The tremendous changes wrought by the application of science through the development of modern industrialism has affected Dewey's thinking in another very vital way. The world of the past, the pre-scientific, pre-industrial world, was a world in which change was slow, insignificant and often imperceptible. That type of a world found expression in the thinking and social organization of the time. Thus there were absolutistic philosophies, an infallible church and an infallible book, eternal certainties and ultimate values. We could expect such ideas to be held in a world where progress was slow and men looked to the past rather than to the future. The modern world has made Dewey, and all of us with him, feel the force of another kind of a world. Industrialism has within the life time of most of us changed the whole aspect of our civilization so that we feel change as the very nature of things and have developed the forward look. Dewey's philosophy voices this new experience of the world—an experience of a world which is dynamic, changing, pluralistic; continually showing new developments and calling for new formulations and new types of social organization.

The viewpoint of truth, which as we have seen, constitutes one of the contributions of Dewey and of pragmatic thinkers to philosophy, finds a reinforcement also in the spirit created by an industrial world. The real test of a given tool, or method, is in this practical world of applied science, its ability to accomplish the purpose for which it is designed. There is no need of any super-empirical tests. The modern industrial world has increased that way of looking at things until it has become a commonplace in the practical affairs of our life. Dewey has made a practical method used by everyone into a guiding philosophy. Beliefs, values, institutions and philosophies find with Dewey only the empirical test of actual service in

the achievement of purposes for which they were designed. They are creations of man, his servants and not his masters.

III

The most profound ethical force which has affected Dewey's philosophy has come from the democratic movement. One feels throughout his writings that spirit of experimentation, of courageous adventure, of cooperative sharing, of humanism which we have come to recognize as the deeper meaning of the term democracy. Dewey has carried the humanistic spirit into all his writings.

Government, business, art, religion, all social institutions have a meaning, a purpose. That purpose is to set free and to develop the capacities of human individuals without respect to race, sex, class or economic status. . . . Democracy has many meanings but if it has a moral meaning it is found in resolving that the supreme test of all political institutions and industrial arrangements shall be the contribution they make to the all-around growth of every member of society.²

Dewey has applied himself with enthusiasm and devotion to the bringing about of the kind of a world which will result in such a development of human capacity. Several factors are of significance in this connection because of the central place they take in Dewey's treatment of ethical and indirectly religious problems.

A social study of the traditional philosophy shows that it arose from the social tradition which ruled in a class society with its "higher" and "ideal" interests. The old dualisms between matter and spirit, things and ideals, natural and supernatural, science and religion are seen, when studied as regards their social genesis, to be closely related to social organization.³ These dichotomies were, as we have seen, avoided when the naturalistic interpretation was accepted and intelligence placed within actual experience, in the procession of events. The spirit of democracy in breaking down the class distinctions which are underneath the social tradition of the classical philosophy is giving strong reinforcement to the new type of philosophy founded on the continuity of the "ideal" and the "real". The development of this aspect of Dewey's thinking is of the utmost importance for ethics and religion.

God only knows how many of the sufferings of life are due to a belief that the natural scene and operations of our life are lacking in ideal import, and to the consequent tendency to flee for lacking ideal factors to some other world inhabited exclusively by ideals. . . . If a philosophy could

²Dewey, *Reconstruction in Philosophy*. p. 186.

³Dewey, *Reconstruction in Philosophy*, Chapter 1.

aid in making it clear to a troubled humanity that ideals are continuous with natural events, that they but represent their possibilities, and that recognized possibilities form methods for a conduct which may realize them in fact, philosophers would enforce the sense of a social calling and responsibility.⁴

This recognition by Dewey of the continuity between ideals and natural events makes his approach to the problems of ethics and religion entirely different from that of traditionalism. Dewey is interested above all in the promotion of the best possible life for men and women. Most religious people would likewise affirm this as a primary interest. Dewey's viewpoint however results in his use of a method that does not seem religious to many. Christianity, traditionally at least, has been greatly interested in "ideals", only secondarily in objective changes in the social order. Changes were desired, to be sure, but it was believed that the best method for the attainment of such changes was through the development of good will, altruism and idealism. "What the world needs", the religious individual would say, "is more love and good will." "Get right the hearts of men and all will be well", has been the slogan of religion. Dewey does not ignore such "ideals" but he believes the best way to achieve such "ideals" is through changing the social situation so that there may be more means for evoking them. He feels there is plenty of "good will", for example in society, but our social order is not organized in such a way as to evoke it. Hence Dewey's concern for "non-moral" factors to bring about moral ends. There is with Dewey no distinct and separate province of the moral sciences. "It (moral science) is physical, biological, and historical knowledge placed in a human context where it will illumine and guide the activities of men."⁵

This accounts for Dewey's opposition to doctrinaire and sentimental solutions of social problems. His enthusiasm for discovering the concrete thing that is needed in any social situation makes him a stern critic of far away ideals and platitudinous generalities.⁶ So much of religion is still voiced in such terms that religious people often feel Dewey as an outspoken critic of religion. He is however interested in the same human problems as the religious man but "ideals" in themselves have little interest for him when such "ideals" are simply empty abstractions.

⁴ Dewey, *Essays in Experimental Logic*, p. 72.

⁵ Dewey, *Human Nature and Conduct*, p. 296.

⁶ Best shown in the essay, "Intelligence and Morals" in *The Influence of Darwin on Philosophy*.

IV

The direct treatment of the question of religion by Dewey seems to most people disappointingly meagre. This is no doubt due to several facts. For one thing, he is judged by traditional definitions of religion. Any application of measures and institutional standards drawn from supernaturalism will show by the very nature of the case, little that is "religious" in his naturalistic thinking. Then again, religion with him is nothing separate and isolated that can be the monopoly of any special institution. When religion is treated as a natural expression of human experience, the spiritual import of our common life together, it is implicated in every aspect of our life. Economics, education, science are all "religious" or can be religious from this point of view. So in one sense the apparent meagerness of detail regarding religion *per se* is due to our judgment of religion as something isolated, separated and capable of treatment in and of itself. While one must recognize this fact it is however evident that whereas in ethics, education, and logic Dewey has carried through his viewpoint with splendid insight the field of religion still awaits from him any such formulation. Any religious formulation based on Dewey's thinking will we may surmise show certain characteristic aspects.

1. Dewey's thorough-going evolutionary viewpoint makes impossible any religious formulation which allies itself with supernaturalism because a philosophy extracted out of the possibilities actually existant in this world makes impossible any supernaturalism. The explanation of Dewey's world is found in terms of the natural and any religious formulation using the insight of his writing cannot offer supernatural explanation as part of its data. This naturalism gives a freedom to religion and spiritual values so that many of the old fears are seen as unnecessary and baseless because a new confidence is gained when religion is seen to spring from the needs, aspirations and ideals that are found in human nature itself. Dewey has thus stated it:

If we set out with a fixed dualism of belief and knowledge, then the uneasy fear that the natural sciences are going to encroach and destroy "spiritual values" haunts us. So we build them a citadel and fortify it; that is, we isolate, professionalize, and thereby weaken beliefs. But if beliefs are the most natural, and in that sense, the most metaphysical of all things, and if knowledge is an organized technique for working out their implications and interrelations, for directing their formation and employ, how unnecessary, how petty the fear and caution.⁷

⁷ *Influence of Darwin on Philosophy and Other Essays*, p. 195.

The change in religion from an authoritatively imposed system where confidence rests upon an infallible book or unchanging doctrine can only come when men find a new confidence and security. Modern science is bringing it about that increasing numbers of people are finding such security in methods of inquiry and experimentation based upon the hypothesis. Their security is in the method of procedure not in any unchanging system of truth. This means the substitution of human confidence and self-reliance for the authoritative supernaturalism of the traditional system. Dewey's thinking is doing just that thing for religious interpretation.

2. The democratic implications of Dewey's thinking are certain to be far reaching on religious thought. Its final effect on all modified theism is as yet uncertain but unquestionably traditional theism has no contact with the insights which he develops. The humanistic drive of the present day goes back to Dewey more than to any other single individual. If the conception of God survives as a vital factor in the religion of the future it will have to be fundamentally changed if the humanistic thinking of Dewey prevails. Actually one can see drastic changes taking place in the whole idea of God. The old conception, construed on political patterns derived from absolute sovereignty, is gradually being adjusted to a democratic world so that great numbers of people think of God's activities not as externalistic to man but as actually blended with man's activities. The purposes of God are no longer interpreted as something within his own counsel but as including the cooperation of man as a real part of that purpose. Whether such attempts to modify theism so that it shall prove adequate to a naturalistic and democratic world will stand is uncertain. If theology does remain it will be secondary for Dewey's instrumental logic and democratic idealism mean that religion, morality, God himself, come into the functional category. Religious interpretation founded on Dewey's thinking is certain to be humanistic. It will emphasize the possibilities of human nature and voice the cry of Swinburne, "Glory to Man in the highest, for Man is the master of things." Dewey would probably say that to be religious is to show practical loyalty and consecration to the realization of the democratic life, to seek with all one's power to bring about the "miracle of the shared life." A religious person would be one whose ideal was to use the material resources to attain the better life for all mankind. This better life

would be one which allowed for the development of human capacity to the fullest extent and made possible the widest sharing of human experience.

3. The question of how a religion of devotion to human values might be promoted receives little consideration from Dewey. Evidently he would rely almost exclusively on the *intelligent* understanding of the meaning of life. The church would apparently have no part in such religious promotion; philosophical insight rather than theology would be the instrument of religious progress. Dewey does not believe that the old ideas can be given new shades of meaning and made to serve in an effective way.

Nothing is gained by deliberative effort to return to ideas which have become incredible, and to symbols which have been emptied of their content of obvious meaning. Nothing can be gained by moves which will increase confusion and obscurity, which tend to an emotional hypocrisy and to a phrase mongering of formulae which seem to mean one thing and really import the opposite.⁸

In recent writings he has occasionally given expression to a certain type of mysticism. Thus he speaks of religion making real a "sense of the whole," a "sense of the community." The symbol of God finds somewhat incidental use in the closing pages of *Human Nature and Conduct*. God as used there would seem synonymous with all those elements of our environment that have shaped our natural and social order. Dewey has not carried out the thought expressed here but it seems capable of further development.

⁸ Dewey, *Hibbert Journal*, VI, 799.

UNIVERSAL LOVE

BY QUENTIN KUEI YUAN HUANG

EVERY sage who considers the governing of a kingdom as his profession must know the source of all troubles. Then he is able to govern. If he does not know the source of all troubles he can not govern. For example, when a physician tries to treat a person's sickness, he has to know the source of his sickness and then he can cure him. If he does not know the source of the sickness, he can not effect a cure. So is the management of the disorder of kingdom. When he (the ruler) knows the source of troubles he is able to administer (his kingdom wisely); while he does not know the source of troubles he is unable to govern it. Therefore, every sage who considers the governing of a kingdom as his profession, has to investigate the source of all disorder. The source of all disorder is in the lack of mutual life. Minister and son are not filial to their ruler and parents; this is disorder. The son, instead of loving his parents, loves only himself; therefore, he benefits himself while letting his parents suffer. The younger brother, instead of loving his elder brother, loves only himself; therefore, he benefits himself while letting his elder brother suffer. The minister, instead of loving his ruler, loves only himself; therefore, he benefits himself by harming the ruler. All this is disorder. A father, not merciful to his son; an elder brother, not (merciful) to his young brother; and a ruler, not (merciful) to his minister; all this constitutes disorder. A father loves not his son but himself, and, therefore, he benefits himself by harming his son. An elder brother loves not his younger brother but himself, and therefore, he benefits himself by harming his younger brother. A ruler loves not his minister but himself, and, therefore, he benefits himself by harming his minister. Why? All lies in that they have no mutual love. Even so it is with robbers and thieves. A robber loves his own family but not others' and so,

by robbing others' families, he benefits his own. A thief loves himself but not another man and so, by stealing from others he benefits himself. Why? All lies in that they do not have mutual love. Likewise, princes fight against others' families and barons attack others countries. Each prince loves his own family but not others' and so, by fighting against others' families he benefits his own. Each baron loves his own country but not others' countries and so, by attacking others' countries he benefits his own. It is similar with all the disorder in the world. All trouble begins in selfishness.

If the world is filled with Universal Love and all men love others as themselves, they will hate to carry out anything unfilial. Is there any person unfilial. If everybody considers his son, younger brother and minister as himself, he will hate to carry out anything unmerciful and unfilial conduct will cease. Is there any robber or thief? If you love others' families as your own, who will rob? If you love others as yourself, who will steal? Robbers and thieves will disappear. Are there princes fighting against others' families; are there barons attacking others' countries? If they consider others' families as their own, who will do the fighting? If they consider others' countries as their own, who will do the attacking? Therefore, princes fighting against others' families and barons attacking others' countries will be seen no more.

If the world have Universal Love, countries will not attack; families will not fight; robbers and thieves will be no more, and all rulers, ministers, parents and sons will be merciful and filial. If this comes to pass, the world will be in order and at peace. Therefore, those sages who consider the governing of a kingdom as their profession, not only prohibit evil but also preach the principle of Universal Love. With mutual love the world will be in order; while with mutual hatred it will be in disorder. So Meh Ti says: "This is why I can not but preach the love of all."

Meh Ti says: "Nowadays the scholars and superior men of the world know only the small, not the great." How do we know this? It is seen within the family. If a member of the family sin against the head of the family he can run away to his neighbor's house. But when his relatives and brothers know it they all admonish him, saying: "You must be admonished; you are obliged to be careful." All hate a member of the family sinning against the head of the family. This is not only true with a family but also with a

nation. If a subject sin against the sovereign of the country, he can run away to the neighboring country. But when his relatives and brothers know it, they all admonish him, saying: "You must be admonished; you must be careful." Who dare say that a sin against the sovereign of the country may be committed! Thus, there is no escape the admonition ought to be stronger. Then it would be well! But there is a saying which states:

"Sun in and sun out
Thou sin daily;
"Thou'lt hate to escape,
For there is no escape."

Even in a dense forest and in a deep ravine Heaven watches clearly. Nevertheless, superior men do not know how to admonish one another. Therefore, I know that the scholars and superior men know only the small and not the great. However, what does Heaven desire and what does Heaven hate? Heaven desires righteousness and hates unrighteousness. Heaven leads the people of the world to follow righteous. So I do what Heaven desires. If I do what Heaven desires, Heaven will do what I desire. What is desired and what is hated? I desire happiness and prosperity but hate misfortune and evil influence. But I lead the people of the world into the abyss of calamity and curse. How do we know that Heaven desires righteousness and hates unrighteousness? It is said: "Having righteousness it is rich; with no righteousness it is poor. Having righteousness, it is at peace; having no righteousness, it is in disorder. Heaven desires its growth and hates its death; desires its wealth and hates its poverty; and desires its peace and hates its disorder." Thus, I know that Heaven desires righteousness and hates unrighteousness.

It is said: "Righteousness is government. There is no government where the lower govern the upper. It must be that the upper govern the lower." Therefore, the common people do their own business with all their might and dare not dissipate themselves. There are scholars in the government. The scholars of the government do their own business with all their might and dare not dissipate themselves. There are generals and ministers in the government. The generals and ministers of the government do their own business with all their might and dare not dissipate themselves.

There are the three dukes and the barons in the government. The three dukes and the barons of the government listen and govern with all their might and dare not dissipate themselves. There is the son of Heaven in the government. The son of Heaven of the government dares not dissipate himself. There is Heaven in the government. The son of Heaven governs the three dukes and the barons, the scholars and the common people of the world. The superior men know firmly and clearly that Heaven governs through the son of Heaven, but the people of the world do not know it. So the ancient holy emperors of the Three Generations, Yu, T'ang, Wen and Wu have evidently told the people of the world that Heaven governs through the son of Heaven. They all feed sheep and cattle and make sacrifices to Shang Ti and spirits. To Heaven they pray for happiness. But I have never heard that the world prays to the son of Heaven for happiness. Thus, I know that Heaven governs through the son of Heaven. The son of Heaven is the noblest and the richest person in the world. In order to be noble and rich we have to follow the will of Heaven. All those who follow the will of Heaven, love one another, receive benefit from their mutual intercourse and shall gain rewards. All these who oppose the will of Heaven, hate those different from themselves, injure each other and shall receive punishments. Who follow the will of Heaven and gain rewards; who oppose the will of Heaven and receive punishments? Meh Ti says: "The ancient holy emperors of the Three Generations, Yu, T'ang, Wen and Wu followed the will of Heaven and, therefore, gained rewards. The ancient cruel emperors of the Three Generations, Chieh, Chou, Yiu and Li opposed the will of Heaven and, therefore, received punishments."

But why did Yu, T'ang, Wen and Wu gain their rewards? Meh Ti says: "They honored Heaven above, served spirits between and loved men below." Therefore, the will of Heaven says: "What I love, love thou; what I benefit, benefit thou. To love others like this is to be universal; to benefit others like this is to be great!" So they were said to be noble as the son of Heaven and rich as the owner of the world. Being the examples for ten thousand generations, they were exalted and praised. Their good government has been valuable to the world and even now they are called the holy emperors.

Why did Chieh, Chou, Yiu and Li receive their punishments?

Meh Ti says: "They vilified Heaven above; insulted spirits between and defamed men below." Therefore, the will of Heaven pronounces: "What I love they hate; what I benefit they injure. To hate others like this is a great (evil); to do harm to others like this is a (wicked use of) strength!" Therefore, they could not live to the end of their lives and could not die with their generations. Even now they are scoffed at and called the cruel emperors.

How do we know that Heaven loves the people of the world universally? We know because Heaven's knowledge is universal. How do we know that Heaven's knowledge is universal? We know because there is the Universal Being. How do we know that there is the Universal Being? We know because Heaven eats universally. How do we know that Heaven eats universally? It is said: "Within the four seas, all the people who eat grain, never fail to feed sheep and cattle and to prepare wine and rice offerings for making sacrifices to Shang Ti and spirits."

Heaven has the people as subjects. Why does Heaven hate them? But I have said that the killing of one innocent person must bring miserable punishment. Who kills the innocent? It is man! Who administers the punishment? It is Heaven! If Heaven does not love the people of the world and men kill one another, why should Heaven give these punishments? Thus, I know that Heaven loves the people of the world.

In following the will of Heaven, the government is righteous; while opposing the will of Heaven, it is a government of force.

What is the nature of the government of righteousness? Meh Ti says: "The large countries would not fight against the small; the big families would not seize (the property of) the small; the strong would not rob the weak; the noble would not be arrogant to the mean; and the wise would not deceive the ignorant. Thus, it shall benefit Heaven above, spirits between and men below." With these three benefits there is naught unprofitable. The world will give them honorable names and call them holy emperors.

The government of force is different from this: "What they speak they do not practice. The large countries fight against the small; the big families seize (what belongs to) the little; the strong rob the weak; the noble become arrogant to the mean; and the wise deceive the ignorant. Thus, it does not benefit Heaven above, spirits between nor men below." With these three kinds of harm there is

nothing profitable. The world will give them disrespectful names and call them cruel emperors.

Meh Ti says: "I have the will of Heaven, just as a wheelwright has his compass and a carpenter has his rule to measure both squares and circles." It is said: "Those who secure it are right; while those who do not secure it are wrong." At present, the writings of the scholars and superior men are countless and their words innumerable concerning the barons above and various scholars below. In speaking of benevolence of righteousness, all of them are widely different in their opinions. How do I know this? It is said: "I have the principle of wisdom as a standard!"

Suppose a man enters a person's garden and steals peaches and plums. On hearing about it, people would say it was wrong and the government would punish him. Why? It is because he profits himself by doing harm to others. Why is it that the one who snatches others' dogs, pigs, or chickens is more unrighteous than the one who enters another person's garden and steal peaches and plums? It is because of this; the more harm he does to others, the more unbenevolent and criminal he is. Why is it that the one who goes into another's barn and takes away horses and oxen, is more unrighteous than the one who snatches others' dogs, pigs, and chickens? It is because of this; the more harm he does to others, the more unbenevolent and criminal he is. Why is that the one who kills an innocent man and seizes his clothes and takes away his lance and sword, is more unrighteous than the one who goes into another's barn and takes away horses and oxen? It is because of this; the more harm he does to others the more unbenevolent and criminal he is.

All superior men know that these things are wrong and consider them unrighteous. Yet when coming to a great event such as that of attacking a country, they not only do not know it is wrong but even praise it and regard it as right. Is there, then, any knowledge of the distinction between righteousness and unrighteousness? To kill one person is criminal and there must be a death penalty. According to this, the criminality of killing ten persons should be ten-fold and there must be ten death penalties. The criminality of killing a hundred persons should be hundred-fold and there must be a hundred death penalties. All superior men know that this is wrong and considered unrighteous, yet when considering a great event such

as that of attacking a country without a righteous cause, they do not consider it as wrong, but praise it and regard it as right. Not knowing its unrighteousness, they write down what they say and leave their words for the generations to come. Knowing its unrighteousness, who will write it down for the knowledge of future generations?

Nowadays there are people like this. Seeing the color black in a small quantity, they call it black; while seeing it in a large quantity, call it white. It is because such men do not know the distinction between white and black. Tasting bitter in a small quantity such a man calls it bitter; while tasting it in a large quantity he calls it sweet. It is because man does not know the difference between sweetness and bitterness. That which is small is wrong; that which is big, such as attacking a country, is not wrong; but right and is to be praised. Can there be in this any knowledge of the distinction of righteousness and unrighteousness? Therefore, the (false) knowledge of the superior men is revealed. This is the trouble caused by having no distinction between righteousness and unrighteousness!

FUNDAMENTALISM AND THE DOCTRINE OF EVOLUTION

BY JOSEPH RATNER

I.

FUNDAMENTALISM means to stay. Hardly more than a year ago Fundamentalism meant, to most men of science, little more than a temporary annoyance; and to enlightened Americans, whether scientists or not, it meant little more than a European disgrace. But today Fundamentalism is no longer merely a passing annoyance or European disgrace; it is a very real personal danger to the scientist and a live menace to the enlightened civilization of America.

Tennessee was only a beginning; the death of Bryan was far from being the end. The number of teachers dismissed or forced to resign because they taught Evolution and the number of legislative enactments prohibiting the teaching of Evolution or of using textbooks that even refer to it, constantly increases. And the States that have reverted to this elementary form of intellectual barbarism, are not by any means, all in the backward South. A state no less distant from the South than Wisconsin, and a State no less close to the Metropolis of the Nation than New Jersey have both anti-evolution legislation of which no doubt they feel proud and boast.

There is no knowing what Fundamentalism may not accomplish, if it is only allowed a few more years of successful activity. It may seem highly alarmist to see Fundamentalism in the dark but not distant future, adding another Amendment to the Constitution. But such vision may yet really be more clairvoyant than alarmist. Is it then much more than a step from a series of State laws to a comprehensive Federal law? The tactics, principles, purposes, and even people of the Anti-Evolution League are at least identical in

spirit with those of the Anti-Saloon League. And if the Anti-Saloon League could capture an Amendment why should not the Anti-Evolution League be able to capture one too? The necessary precedent has been established.

There is some reason to hope, however, that the worst may fail to come. Hope mainly springs from the fact that the Science League of America appreciates the dangerous character of the Fundamentalist movement. The Science League realizes that there is a real, not a sham battle on, and it is setting about in live earnest to mobilize the forces of those who are "Friends of Scientific Freedom." The Science League recognizes, as its secretary, Professor Woodbridge Riley puts it, that "The Philistines are upon us, and we need business methods and ample finances to check the rise of non-science." This understanding gives one great reason to hope for the Friends of Scientific Freedom will unquestionably respond to the call, and give the Science League all the support it asks for.

Money and business organization, especially in the America of today, are, without doubt, indispensable means for launching any effective campaign. But it is very difficult to believe that money and business organization will of themselves prove sufficient to check the sinister forces of Fundamentalism. Fundamentalism assuredly owes a great deal to the money and organization behind it; but it is seriously to misjudge and underestimate the powers of Fundamentalism to attribute its successes solely, or even chiefly, to its material resources. Fundamentalism has succeeded so far, and will continue to succeed because its purpose is sharply defined and easily intelligible; and the appeal of its purpose is almost universal and of tremendous emotional power. The purpose of Fundamentalism is to save mankind from the degradation of irreligion and immorality which, it maintains, is consequent upon rejecting the account of creation according to Genesis, and accepting in its stead the doctrine of Evolution. This is a purpose everyone can understand. And it is as powerful and universal in emotional appeal, as the purpose the Prohibitionist successfully espoused: the purpose of saving mankind from the ultimate sin and wretchedness brought on by the use of alcohol.

It is with this purpose of Fundamentalism that the Friends of Scientific Freedom have really to cope. And no amount of money, no matter how judiciously it is used, will of itself ensure them

victory. The only way Science can emerge victorious is by making its purpose as universally intelligible, and giving it, moreover, an emotional appeal exceeding in power the appeal of Fundamentalism. For the conflict is by no means just between the Fundamentalist and the Evolutionist. If it were, the outcome would be a draw because the confused rhetoric and unthinking authoritarianism of the Fundamentalist would have no effect on the Evolutionist—unless, perhaps to make him acutely subject to *taedium vitae*; and the scientific arguments and demonstrations of the Evolutionist would have no effect on the Fundamentalist (whose mind is adamant to reason)—unless, perhaps, to make him acutely conscious of the growing power of the Devil. The real struggle is not between the Fundamentalist and Evolutionist themselves, but between the Fundamentalist and Evolutionist for intellectual domination over the masses of the American people who, when left alone, are intellectually as indifferent to the Bible as they are to Science. The final outcome of such a struggle can hardly be a draw: one side or the other will score a victory.

Today, as matters are in the main, Fundamentalism occupies by far the superior position. In contrast to the simple and stirring purpose of the Fundamentalist the purpose of the Evolutionist is hopelessly vague, and to most people, of negligible importance. What does the Evolutionist want? Scientific freedom! How very feeble, to the great masses of people, must the abstract demand for scientific freedom appear beside the concrete demand for moral salvation and eternal redemption! Furthermore, just what does "scientific freedom" involve? Is it true that scientific freedom leads one hard and fast into the bottomless abyss of irreligion and immorality as the Fundamentalist claims? If so, wherein is such "freedom" different from "license"—one can almost hear the perfervid Crusaders jubilantly exclaim? For the Evolutionist simply to ask for "freedom" is, as far as the Fundamentalist is concerned, for the Evolutionist to be guilty of either evading the issue or of begging the question. To make his plea for freedom significant, the Evolutionist must first justify the nature and uses of the freedom he demands. But this he can do only by convincing the Fundamentalists that their literal faith in the Bible is misguided, and that their interpretations of the doctrine of Evolution and the constructions they put upon it, are altogether wrong.

It is not in the least likely that the Evolutionist will succeed in confuting the Fundamentalist and winning his case unless he radically changes his tactics and method of approach. The aim should be indirectly to circumvent the Fundamentalist rather than to annihilate him directly by frontal attack.

If the Fundamentalist is allowed to maintain that the issue at stake between Fundamentalism and Science is whether one shall accept the book of Genesis or the doctrine of Evolution, one may safely wager one's fortune in the next world as well as in this, that Fundamentalism will win. The reason is simple: Fundamentalism, in seeking to take Evolution away from the masses of people is not seeking to take away something that is seriously involved in their lives, something the people have become strongly attached to and care much about. But Science, in seeking to take away Genesis from the masses of people, is seeking to take away something which is intimately interwoven in the emotional lives of the people; not because Genesis itself is something that intrinsically interests or emotionally affects the people, but because it is part of the sanctified compendium or canon which is the ostensible basis of their religious beliefs and practices.

It bears emphatic repetition that the masses accept Genesis and can be made to feel terribly concerned about it, only because it belongs to the Bible and, in their unsophistication, they can be made to believe that to reject any part of the Bible is equivalent to electing to go to Hell. The real indifference of the masses to cosmological or theological stories is adequately testified to by the widespread disregard of, for example, Greek mythology—which is inherently more entertaining and attractive than Jewish mythology. Popular interest in Genesis is accidental, not essential, and it would be idle to expect popular interest in Evolution to be otherwise. As long therefore as the defenders of Science carry on their controversy on the high plea of disinterested scientific enquiry, and restrict their attention to Evolution itself, the popular ear will be ever more willing to listen to the insistent clamor of those who make the story of Genesis a necessary part of the key to moral salvation and eternal bliss.

Evolution cannot, of course, be entirely eliminated from the current controversy. There is no need that it should be. But Evolution must be made an element in a larger issue in the same way that Genesis has been made an element in a larger issue, if Science

is to wage a winning and not a losing battle. To make the choice between Evolution and Genesis a real one for the masses and not a foregone conclusion in favor of Genesis, scientists will have to tie Evolution up to things actually vital in the lives of the people they are trying to reach and upon whom their fate in so large measure now depends. They will have to make, in some way, the loss of Evolution a loss significant to the masses of people appealed to, and not merely a loss significant to scientists and students of science as is the case today.

II.

Evolutionists have tried, since the Scopes trial, to popularize the doctrine of Evolution. But it is becoming increasingly obvious that seriously to accept the Fundamentalist challenge on the isolated question of Evolution is to give the Fundamentalist an enormous advantage. Just because Evolution is a highly complicated doctrine, depending for its evidences upon many abstrusely technical sciences, and just because it is, in its present stage, in a highly qualified and tentative formulation, it is a fine target for its Biblical opponents. The Evolutionist is firmly convinced, and has ample evidence to support his conviction, that evolution does take place, that the present forms of things are developments from earlier and widely differing forms; but the Evolutionist freely admits that he does not as yet know the laws governing the processes of evolutionary transformations in the manifold realms of Nature. The Evolutionist freely admits that his doctrine is still in the stage of being an hypothesis.

It is unnecessary to enter into a lengthy examination of the kinds of arguments the Fundamentalist uses in his intended refutations of Evolution. It will be sufficiently instructive to consider one such argument by way of illustration. The Evolutionist, it has been said, freely admits that his doctrine is still in a hypothetical stage. Such an admission is, to the scientist, quite innocent of all harm. But, in the eyes of the Fundamentalist it is very incriminating indeed. For an hypothesis does not mean to the Fundamentalist what it means to the scientist. To the trained scientific mind, the fact that a doctrine is formulated as an hypothesis is no sort of objection to it. It does not mean that the doctrine has no evidence in its support; it simply means that the doctrine has no evidence of

the kind that justifies and makes possible the precise and final formulation known as a scientific law. The scientist knows that hypotheses play a central role in scientific procedure. They function both as tentative conclusions and as programs for further action. They sum up the meaning of observations already made, and give direction to subsequent investigation. Without hypotheses the scientist would be lost in a mad sea of mere data. And besides their technical significance in scientific procedure, hypotheses embody, for the scientist, the general spirit and character of his method of inquiry; they represent, for him, scientific caution and open-mindedness—the traits of mind the scientist prides himself on most.

To the Fundamentalist hypotheses mean none of these creditable and valuable things. And the Fundamentalist knows that he can range on his side, the great masses of people. For the common people do not possess the strength of mind and training required to appreciate the technical significance and great human value of hypotheses. The general run of people do not like uncertainties, tentative results, generalizations which are qualified; they want things to be plain, definite and certain because they can understand only what is plain, definite and certain. Even the common run of graduating college student vastly prefers and feels much more at home with things he can take hold of, that are concrete. The desire for brass tacks, irrespective of considerations of their importance or ultimate usefulness, is very pervasive among mankind and is extremely difficult, if not impossible, to overcome.

It is, consequently, quite easy for a clever orator, like the late Mr. Bryan, to make the masses he addresses, quite suspicious, even afraid of Evolution, merely on the ground that it is an "hypothesis;" for anything that people are unequal to, or even unaccustomed to, they are naturally afraid or suspicious of.

In one of the chapters of his Fundamentalist volume *In His Image* Mr. Bryan gives the stock kind of forensic analysis and discussion of the doctrine of Evolution; with great parade of scholarly research and industrious precision, Mr. Bryan unhesitatingly goes to the very origin of evil in modern life—the early editions of the *Origin of Species* and the *Descent of Man*. After pointing out that in those iniquitous volumes Darwin, instead of making dogmatic assertions, very frequently makes instead highly qualified statements using such terms as "apparently" "probably" "we may well

suppose" which latter phrase Mr. Bryan tells us "occurs over eight hundred times in his (Darwin's) two principal works"—necessarily forcing one to the conclusion that "the eminent scientist is guessing") Mr. Bryan goes on fearlessly to show that the essence of scientific method involved in proceeding by means of hypotheses is really nothing more than a thinly disguised fraud. "The word hypothesis is a synonym used by scientists for the word guess; it is more dignified in sound and more imposing to the sight, but it has the same meaning as the old-fashioned, every-day word guess." Wherefore, Mr. Bryan retrospectively prophesies "If Darwin had described his doctrine as a guess instead of calling it an hypothesis, it would not have lived a year."

In contrast to the guesses of Darwin and his like, there is the certainty the Bible affords us. The vast mass of data Darwin collected—data which the *Origin of Species* and the *Descent of Man* only summarized—meant nothing whatsoever to Bryan; and that Darwin, with the magnificent intellectual restraint of the great scientist, did not take even his stupendous accumulation of data as conclusive proof, but preferred to consider it merely as probable evidence, mean to Bryan even less. Bryan—in more senses than one the Great Commoner—wanted certainty. And if sheer, unintelligent dogmatism was the only way to get certainty, then dogmatism was necessarily superior to all careful, tentative, scientific investigation. Genesis was necessarily superior to Evolution.

"If we accept the Bible as true, we have no difficulty in determining the origin of man," says Mr. Bryan, with truly touching simplicity. And no doubt we have no difficulty in determining the origin and nature of anything else. For, as Mr. Bryan points out on another page, "the Bible does not say" for example" that reproduction shall be *nearly* according to kind, or *seemingly* according to kind. The statement is positive that it is *according to kind*." And a positive statement obviously leaves no room for doubt. Hence when Mr. Bryan asks the rhetorical question "Why should the Bible, which the centuries have not been able to shake, be discarded for scientific works that have to be revised and corrected every few years?" he knows that the masses of people he is addressing will recognize as just and true his own rhetorical answer: "The preference should be given to the Bible."

The *preference* should be given to the Bible! Mr. Bryan knew

his audience. The statement of his preference is not vain, it finds a responsive echo in the minds of most people. For most people, especially for Fundamentalists, knowledge is not something that grows, something that itself is in process of development, of evolution, something that must be constantly pursued and is only with great difficulty ever caught. Knowledge for the masses is something that is inherited, something that is handed down and is to be passively accepted. For them knowledge is not a living function of the human mind; it is something dead and mummified. And, naturally enough, that knowledge is of greater excellence (and should be therefore given the preference!) which has been in its mummified state for a greater number of generations. What could be a better instance of knowledge when thus conceived, than the Bible? Its statements remain unaltered (though—not unchallenged) from age to age. Within the circle of believers, its statements are never questioned, never subjected to criticism; they are blindly, abjectly, received. Beside so venerable and austere a volume as the Bible, what sort of figure does Evolution cut—a mere “hypothesis,” an item of knowledge still in its early and rapidly changing stages of growth? And when we further realize that “the hypothesis to which the name of Darwin has been given. . . is obscuring God and weakening all the virtues that rest upon the religious tie between God and man” can we doubt for a moment longer that the preference *should* be given to the Bible?

III.

The objection against letting the doctrine of Evolution remain the controversial issue, is not merely the opportunist one that the Evolutionist is seriously handicapped in defending it forensically (though such an objection is valid and strong enough); it is that the polemical discussions of Evolution obscure rather than clarify the fundamental issue involved. The fundamental issue is not—Shall we accept Genesis or Evolution? It is—Shall we follow the methods of science or the method of the believers in the Bible? Shall we use our reason, or shall we blindly accept things on faith? The real war is between Science and the Bible—sometimes with incredible inaccuracy called the war between Science and Religion.

One of the ways to make the real issue clear is for the Evolutionist to recall attention, for instance, to the earlier controversy

between the Bible and Science over certain doctrines advanced by astronomers. As the Fundamentalist knows, or else can easily find out, certain doctrines in astronomy were as strenuously opposed by earlier believers in the Bible as the doctrine of Evolution is now being opposed by the Fundamentalist himself. And for precisely the same (supposedly) moral and religious reasons. Let the old controversy, therefore, between the Bible and Astronomy be revived in all its original force. The Fundamentalist surely can have no more objection to turning history back 360 than he has to turning it back 60 years. If the Fundamentalist wants to dispute matters of science, let him dispute with the astronomer rather than with the biologist. Astronomy is so much more exact and mathematical than biology. And the Fundamentalist will find sufficient justification for dispute since astronomy as flatly controverts the statements in the Bible pertaining to the nature of the earth and stars and their relations to one another, as Evolution controverts the statements in the Bible pertaining to man and the rest of the animal kingdom and their relations to one another. Indeed, astronomy goes further in its heresy than Evolution for astronomy maintains that its findings are conclusively established; they aren't mere hypotheses—mere "guesses." The astronomer maintains that he has actually "proven" that the earth is round and not flat, that the earth is one of a number of the sun's satellites, that the sun is not a luminary expressly hung in its peculiar place for the benefit of the inhabitants of the earth. If Darwin destroyed "the faith of millions" (Mr. Bryan's estimate) Copernicus certainly destroyed the faith of at least hundreds of thousands. Do these hundreds of thousands then mean nothing to the ardent salvational soul of the Fundamentalist?

The scientist should insist upon the fact that any specific doctrine in science does not mean anywhere near as much to the scientist as the methods and principles of science. It is really an accident of history that first astronomy and then some three centuries later biology came to disturb the faith of the believers in the Bible. Scientific interest happened as a matter of historical fact to center with great effect first in physics and astronomy; but it is precisely the same spirit and method which resulted in the abandonment of Biblical astronomy which, when applied to the study of biology, necessitated abandoning Biblical doctrines concerning the origin of animal species.

Indeed, it would be eminently advisable for the Evolutionist to take another step and direct the attention of the Fundamentalist to the future. He should point out to the Fundamentalist that the very same spirit and method of enquiry which led to the discovery of heretical astronomy and biology has already led to the establishment of even more vitally heretical doctrines concerning the soul of man. Astronomy and biology do not after all necessarily deny that man has a soul; it is outside their province to pronounce upon that momentous aspect of human nature. But to deny that man has a soul is just what, for the most part, modern psychology does. How much greater must be the inevitable moral degradation and irreligion of those who are taught behavioristic psychology than is the eventual degradation of those who are taught astronomy and evolutionary biology! If man has no soul, how false is the Bible when it says that his soul is what God gave him, in a manner more intimate and more expressive of God's inner self than the body God gave man by kneading him out of mud! Is it not the soul of man that makes him truly In His Image? If man has no soul, what force remains to the whole theological doctrine of human immortality, and the doctrine of punishments and rewards in Heaven and Hell? Let the Fundamentalist open his eyes, and, with the distinctive prerogative of man, look both before and after. Evolution is really only a symptom; the real menace is the general procedure, method, presuppositions of science. As long as science is allowed to exist at all, there will never be any peace for the believers in the Bible. Where Fundamentalism will lop off one limb from the scientific body, many will grow. Let the Fundamentalist therefore legislate wisely if he is going to legislate at all. Let the law be so phrased that the public teaching of any science is a capital offense against the young; and the private pursuit of any science a criminal offense against society!

IV.

It is the custom of all crusading, evangelical movements to seize upon some one thing that has advantageous forensic possibilities, no matter how incidental to the real issue those possibilities are. But scientists should not, at this late date, be victimized by a strategy so transparent. In so far as the struggle remains on what one might with some generosity call the intellectual plan, it would greatly help the cause of science and American civilization to make prominent

the basic disagreement between the upholders of Science and the upholders of the Bible.

The general run of people do not stop to question their beliefs. For them, their beliefs are final, ultimate, fundamental. The Fundamentalists, as Professor Dewey pointed out, have very astutely capitalized this general human failing. Their name is their slogan. Unfortunately, however, it is no weapon against Fundamentalism to point out that what is fundamental for one class of people may not be fundamental for another; and that what may be fundamental to one set of beliefs, may not be at all fundamental to the nature of the universe those beliefs are about. Beliefs may quite well be fundamental in the lives of a given people and yet for all that also be utterly false—as happens to be the case with the belief that the Bible is literally and uniformly infallibly true. It is important, however, as indicating what must be done, to point out that for the masses of people, that is fundamental which is accepted, and that what is accepted, is deemed by them to be necessarily and eternally true. With most people, that is to say, tradition is absolutely fundamental, and for no other better reason than the mere fact that it is tradition. It is this that the Fundamentalist exploits to the uttermost, and has incorporated into his name.

Fundamentalism is riding on the great wave of intolerance and bigotry which was violently aroused during the war, and revived after the war—an intolerance and bigotry which is ever latent in the masses of people who do not think, and hence inevitably consider their own inherited ideas and customs as being the only proper, if not the only possible, ones. The tradition of scientific freedom may have appeared to be strong in recent years when it was left unchallenged; but for the tradition of scientific freedom even to stand its own ground in America now by its own efforts is, as contemporary events have sufficiently demonstrated, impossible.

To contend against the force of a militant tradition by arguments of reason, is as effective as to argue with the rising tide. The only way of successfully overcoming an active tradition is to set into operation a more powerful counteracting tradition.

Such a tradition scientists can set working by making perfectly clear and inescapable the recognition that all sciences are essentially the same by virtue of their method and ideal, and that scientific method breeds heresy in all fields—including the historical. With

this clearly advanced, the Fundamentalist will be forced to contend not merely against the newest scientific doctrine which is also weakest in general social prestige; he will have to contend against scientific doctrines like astronomy, for example, which are quite firmly entrenched in the educational tradition—doctrines moreover which unlike Evolution do not afford the sly public debater much opportunity for displaying his talents. Fundamentalists can, without fear of incurring general social disapproval, seek to force Evolution out of the curricula of school and college. But is it likely they would run no risk of defeat if they had the hardihood (and consistency) to do the same to elementary astronomy?

But scientists need not and should not rest their hopes upon merely introducing, say, astronomy into the controversy. All theoretical sciences should be involved. If perchance, the conflicts between some theoretical sciences and the Bible are as yet not known, it would be eminently advisable to endow research workers to discover them. . . . Scientists should not let Fundamentalism remain a nasty, quarrelsome affair. They should make the contemporary controversy the occasion for a real war between Science and the Bible. The scientist should take the offensive, not the defensive. Let it be a war to end all war between the Bible and Science! Such a war must rage on as many fronts as possible.

V.

In furtherance of this sublime end, the battle should be taken as much as possible out of the theoretical into the practical sphere. As long as the controversy rests in the theoretical sphere, it is very likely to become, on the part of the scientists—no matter how good their attentions—an entirely academic discussion, with no power at all to check the very decidedly practical activity of the Fundamentalists. It is so all too likely that the controversy will be siezed upon more as an opportunity for displaying erudite, professional wisdom—a little popularized of course—than as an opportunity for directing social opinion into enlightened channels of thought. The latter can be accomplished, not by bountifully allowing the public to have a distant peep at the sacred arcana of Science, but by making the public realize in a vivid way, to what extent their fundamental everyday interests and ordinary lives are interwoven with the vital interests and methods of science. The public must be made to

realize not that Science is something remote and foreign, something that they may, at best, abjectly look up to, but can never really know; they must be made to understand that science is a quite human affair, and that it affects their lives in a constant and intimate way.

The appeal to the public must be based primarily on the emotions of the public. The public must first be aroused before it can be instructed. In this the public is no different from the individual human being. Fortunately Science can arouse the American public if it only wants to; and it can arouse it in a very powerful way. For it is not only the theoretical sciences which are closely allied: the theoretical are closely allied to the practical sciences as well. Practical inventions are very intimately dependent upon theoretical methods and discoveries.

Without the practical inventions which constitute the modern industrial system, the physical aspect of contemporary American civilization would be inconceivable. And American prosperity, as it is known today, would be non-existent. Could Science ever dream of a more powerful weapon of persuasion than prosperity? Has the American public today, towards anything, sentiments more powerful than it has towards wealth? Could any blow strike at the heart of the American People with more terrifying force than a blow directed at America's industrial success? What is the President of the United States, today, if not the duly elected High Priest of the new national religion of Prosperity?

The foundation of American prosperity is American industry; and modern industry is nothing other than highly technical science. If scientists would only emphasize this fact and make it plain to the American public, what an enormous advantage they would have over the Fundamentalists—instead of the Fundamentalists having an enormous advantage over them. People are of all things least prone to forsake their material belongings. Human emotions always have been, and always will be more firmly and deeply rooted in material than in spiritual goods. What would be the attitude of the public towards the Fundamentalist if they were made to realize that the Fundamentalist, to be honest and consistent, must finally strive to deprive them of, not merely some theory of Evolution they vaguely heard of and care less about, but of their actual, tangible possessions which they so thoroughly appreciate and so violently prize?

But furthermore! Not only is the material life and wealth of the

American public absolutely dependent upon technical science; their spiritual life is similarly dependent today. Without the movie, phonograph, radio, tabloid, Ford car, and now latest of all, airplane—without all these creations of Science—what would the spiritual life of the American people degenerate to? The housewife out in the depths of Arizona, or in the wilds of Massachusetts is, today, as spiritually dependent upon the radio (to consider only one example) as she was a decade ago—upon the party telephone wire. And the miracles the people once demanded from the religious practitioner, they now confidently expect from the scientific “wizard.” If science does not enable man to walk, it enables him to fly over the face of the waters. And who shall say that flying is a lesser miracle than walking? Even if it is a lesser miracle, certainly for the people, it is miracle enough.

Can anyone for one moment soberly think that the American people would supinely allow any group—even of bigots—to take from them all the indispensable instruments of their material spiritual life?

VI.

Even Mr. Bryan himself has to admit that “Science has rendered invaluable service to society.” But with Mr. Bryan and his co-Fundamentalists such admission can be little more than lip-service. If they really appreciated the service science has done, they would not be quite so ready to choke the living breath out of science with their clumsy fingers. Perhaps though, activity is not due to lack of appreciation, really, but to lack of real understanding. If this be the case, then it is all the more incumbent upon the scientist to enlighten them, and with them the population of the United States. Let the people be informed in what deep and all-pervasive sense it is true that we live in an age of science; and in what deep sense it is true that science is a single thing. And let the Fundamentalists be informed that if they want to keep the Bible intact, then they must ostracize all theoretical and all practical sciences: the ostracism of Evolution is by no means enough.

Such counsel of war could not very safely be given a few centuries ago. Then organized science played practically no part in the lives of the people; and it would be just as easy for an intolerant movement to banish all sciences as any one science from society.

Today, happily, such is not the case. The practical achievements of science have seriously modified the lives of all the people; and the loss of such things as science has given them would be to them far more significant than losing the book of Genesis—or even several Mosaic books.

If the American people were offered the choice between Science (practical as well as theoretical) and, say, the whole Pentateuch, their decision would by no means be a foregone conclusion in favor of the Pentateuch. And this is just the kind of choice the American people should be confronted with. If the Fundamentalists maintain that the Bible must be accepted in its entirety if it is accepted at all, surely the scientists have the right to maintain that science must be accepted in its entirety, if it is accepted at all. The doctrine of Evolution is merely an incident in science and the scientist should insist that it be considered as such. Let the masses be made familiar with the unity of science, even if they are not immediately made to understand all of the detailed reasons why it is unified. And then we may feel certain that vastly increasing numbers will gradually perceive, for instance, the howling absurdity of the Fundamentalist preaching against the doctrine of Evolution through a microphone!

Science is faced with a golden opportunity today. Superstitious institutions which were complacently thought to be moribund, are now seen to be rapidly spreading, virulent national diseases. Fundamentalism is a gigantic national menace; but just because it is such a gigantic menace, it can become—if scientists and the friends of science will only rise to the occasion—a marvellous opportunity for launching a vigorous and telling campaign in the interests of science and human enlightenment. The malignant growth of superstition can become the opportunity for the wide diffusion of the healing light of human intelligence. What vast and salutary changes will result to American civilization if scientists and the friends of science make the most of the combat they are challenged to engage in, one can only hope for and at best dimly prevision, not prophesy. But even if only some of the possible advantageous transformations should be the consequences of triumphant battle, then Fundamentalism would indeed be an unexampled boon to American civilization—all the more to be cherished for coming so disguised!

THE FAITH OF AN ATHEIST

BY ROBERT P. RICHLARDSON

IT is an old adage that half the world does not know how the other half lives. Equally true would it be to say that half the intellectual world does not know how the other half thinks. An illustration of this is afforded by an article, *The Unbelief of an Unbeliever*, in *The Open Court* of November, 1927. The author, T. B. Stork, though doubtless endeavoring to be fair, shows himself quite unable to understand a point of view, that of Atheism, diametrically opposed to his own. This is perhaps not surprising, since the title "Atheist" is most frequently made use of either as a term of reproach or as a gesture of defiance. Those who use it in the latter way, upholding Atheism merely in the spirit of bravado, are hardly competent to give adequate account of that philosophical position, and it may be of service to set forth this as it appears to one who considers the matter dispassionately and adopts the name "Atheist" merely as a descriptive title.

To accept Atheism is, of course, to take the view that there is no God, and this is definite denial, not the "doubt" which some of our opponents attribute to us. Those who so misapprehend us will hardly contend that every assertion not believed is to be "doubted" unless it is a direct contradiction in terms, and yet it is only in such a sense that an Atheist can be said to "doubt" any theistic affirmation. There is no logical contradiction in saying that the earth is flat, but who has any doubts as to the falsity of that assertion? Likewise there is no local contradiction in saying there exists a being corresponding to certain conceptions of God, but the Atheist finds the evidence of this on a par with reasons for affirming the flatness of the earth.

The theistic conceptions which are most satisfactory as regards self-consistency are however precisely those which appeal the least

to the ordinary Theist. Such is the conception of a personal God of strictly limited powers and perhaps limited knowledge. It is these limitations alone which make it possible to regard Him as "good" in the sense in which this adjective is used by any decent man or woman. Of this character was the God of John Stuart Mill (in whose opinion however the "appearances in nature" while indicating a Creator, "absolutely contradicts the idea of a perfectly good maker") and the "Invisible King" plays a like part in the Theism of H. G. Wells who regards him as a strongly marked and knowable personality, loving, inspiring and lovable. The Atheist, while he cannot agree with them, has the greatest respect and sympathy for those whose faith is in a Prince of the Power of Goodness, a supernatural leader of mankind in the struggle for right. But as man makes God in his own image, those who hold this belief are not numerous, the common herd preferring a more ignoble object of adoration and usually describing their Deity as all-wise and all-powerful. True, it is probable that many believers of this type ascribe omnipotence and omniscience to their God only in a Pickwickian sense. This is the traditional attitude carried down from savages who fawned upon and flattered a superhuman being whom they feared. Their characterization of Him as all-powerful and all-knowing meant no more than the stock phrases of adulation addressed to a petty Oriental despot by his subjects. Taking however the customary phraseology at its face value, the Atheist must file a decisive caveat in the name of both logic and morality against the orthodox conception of God. Omnipotence, if it means anything at all, means the ability to do whatever does not involve a contradiction. An omnipotent God could not make a three-sided quadrilateral. Nor could He, while leaving mankind freedom of the will, prevent a human being from deciding to kill another. But he could make a world in which the shortest path between two points was not along a Euclidean straight line but along a Lobatchevskian geodesic, and in which two parallel lines, instead of being everywhere equidistant were asymptotic. And unquestionably he could always paralyse the arm of the would-be murderer and prevent the accomplishment of the crime. This means that an omnipotent God, if he exist, must be held responsible for all the evils of the universe. All misery, all crime, everything that is base and vile, exists because he suffers it. To accept such a Deity has as logical consequence the

destruction of all morality—it means taking His pleasure, evinced by nature “red in tooth and claw”, as the standard of right and wrong, and saying that whatever is is right. And the Atheist not only rejects the evidence brought forward for the existence of the orthodox personal God, but fails to find anything worthy of respect in this conception.

As time goes on conceptions of personal Gods find less favor with the Theists of the intellectual type. These believers of to-day usually pin their faith upon a God who is decidedly lacking in personality, not to say individuality. None the less Theists indulge in the misnomer of designating this God by the masculine pronoun “He.” Their “He” is however wrapped in mystery, and Mr. Wells not unaptly describes Him as “The Veiled Being” comprising the “ultimate mysteries of the universe.” This being whom we are called upon to worship is, we are given to understand, the Supreme Ruler of the Universe, a Mighty Incomprehensible Power, the First Cause of all that happens and of all that exists, the Essence or Ultimate Ground of all things, etc. etc. It is in reference to such phrases that it is sometimes said that the Atheist does not deny the existence of God but merely declares he does not know what Theists mean when they speak of Him. Misunderstanding is however prone to arise from this way of putting the matter, and it would be more to the point to say that the Atheist feels he knows only too well what the phrases in question mean and that in most cases they mean nothing; they are nonsense. It is indeed precisely this stand which distinguishes the true Atheist from the Agnostic. For the latter, with Herbert Spencer, whose philosophy has been well said to have a “recognizable Theistic tendency” listens in reverence and awe to the stock phrases of Impersonal Theism and proceeds to invent one of his own, “The Unknowable”, before which he prostrates himself.

The controversy here, of course, is one of philosophy, and Atheism, in the proper sense of that term, being a philosophical doctrine is the natural product of a certain school of philosophical thought. Whether one turns to the side of Theism and its ally Agnosticism or to that of Atheism depends in the last analysis on the philosophy he adopts. And the philosophy of Empiricism or Phenomenalism (as opposed to Institutionalism and Realism or Noumenalism)—the philosophical spirit which distinguished Aristotle from Plato, and Occam from Duns Scotus and Aquinas, and

which in modern times inspired such thinkers as Hobbes, Locke, Berkeley, Hume and Mill—this is unquestionably the high road to Atheism. Those who have steadfastly kept on this road will not admit an Unknowable but will concede only the possibility of many unknowns—things unknown, that is to say, to us. For in the Empirical philosophy existence and perceptibility go hand in hand, and what could not be perceived by some sentient being, properly located, is *ipse facto* non-existent. Perceivability is, of course, sometimes hypothetical, that is we say something exists although not actually perceived because we are convinced it would be perceived were it accessible to observation. And moreover due account is taken of the possibility of something being perceived by more gifted percipients where human beings perceive nothing. Thus there need be no hesitation in admitting as possible the existence of things we cannot perceive, a possibility which would pass into a probability were we to meet with a race of persons who, claiming ability to perceive where we do not, showed themselves to be superior to normal human beings in the way the latter are superior to the blind.

Positing such contingencies the Atheist contends that while there may be unknowns which are unknowable to him there can assuredly be no absolute Unknowable. To assert existence where there is no possibility of perceiving anything is nonsense. And to take as object of worship the unknowable as such, appears to the Atheist the height of folly. A shadow is unknown and unknowable to a blind man but who would say he ought to accept it as his God?

Like the shibboleth of Agnosticism the banal phrases of Impersonal Theism fail to survive the scrutiny of the Empirical Philosophy. A "supreme ruler" either denotes a person or is a phrase devoid of sense. The "cause" of the ancient philosophy vanished into thin air under the keen scrutiny of Hume, leaving causation nothing more than an observed reoccurrence of events of one type when events of another type reoccur. This empirical relation has no necessity about it, and the alleged need for a first cause is thrown out of court at once. There is no justification whatever for assuming that everything must have a cause, still less for asserting that every event is a link in a chain of causation which when traced back far enough must have, as a link common to every other chain, a first and uncaused cause. Causes moreover being

merely commonplace events, the fact that a certain event was the first in the universe would not justify setting it up as an object of adoration. It is not impossible that billions of years ago the universe came to a beginning through the springing into existence of material bodies—that is, matter and space and with them time. But this event would have no more claim to be worshipped than a fall of meteors to the earth. Such an event is not a prime mover of the universe, nor would its priority to all other events justify assuming there to have been a prime mover behind it. Similarly such words as “Ground,” “Power,” “Mysteries” etc. fail to move the Empirical philosopher to thoughts of things divine. They are intelligible when properly used, but in theistic parlance seem merely to serve as interjections expressive of emotions of awe and bewilderment arising from considering the universe as a whole. If an interpretation beyond this is attempted the words are found to denote something one knows not what, located no one knows where. And what is merely something but is nothing in particular—which lacks aliquidity, to use an old scholastic phraseology which might well be revived—is outside the pale of thought, still more of belief.

To the Atheist then the “intellectual compulsion” to faith in an incomprehensible God is nil. Nor does he find any emotional urgings towards such belief. He cannot find in a pseudo-conception which under philosophical analysis is resolved into a meaningless phrase the comfort which history tells us a certain old lady took in “the blessed word Mesopotamia.” As to the orthodox personal God, an all-powerful Being who has under full control all the suffering and evil in the world but will not lift a finger to right human wrongs, the thought, if taken seriously, would be a veritable nightmare. The Invisible King theory, that of God, Limited, is, on the other hand, in the view of the Atheist, a pleasant dream. But enjoyable as a dream may be, when taken as such, there is grave danger in attempting to put dream life on a par with real life. Cravings for a dream-world existence full of glorious illusions can be satisfied by hashish even more efficaciously than by illogic, but he who addicts himself to either is ill-advised.

To the Theist, apparently, the greatest consolation of religion is the promise of a life hereafter, and this again makes no appeal to the Atheist. Passing in review all the heavens promised to true believers by the various faiths the Atheist finds none of them to his

taste. As he mentally inspects each he is constrained to murmur: This is no place for a gentleman! Quite manifest is the lack of attraction in the orthodox heaven where eternity is spent in giving praise to a superhuman being who is actually supposed to enjoy this incessant adulation. As to survival in the Buddhist Nirvana where all desire and indeed all activity, mental and physical ceases, this would simply be life from which has been taken all that makes life worth while. Who would desire future existence as a jelly fish? The Spiritualist "Summerland" is the worst of all, for here, according to reports that reach us, you sink to the level of an imbecile. Shakespeare composes doggerel unworthy of a schoolboy, and Aristotle, giving up the search for truth which was his dearest interest in life babbles inanities about the happiness of the dwellers in Summerland and tells old women where they can find lost thimbles. And considering the possibilities of life beyond the grave in all its aspects the Atheist is inclined to echo the sentiments of that great philosopher, John Stuart Mill, who said: "The belief in life after death without any probable surmise as to what it is to be would be no consolation but the very king of terrors. A journey into the utterly unknown—the thought is sufficient to strike with alarm the firmest heart. . . . It is well, therefore, that all appearances and probabilities are in favor of the cessation of our consciousness when our earthly mechanism ceases to work."¹

Theists, looking at Atheism from the outside, have a curious habit of assuming that in this philosophy of life there is no room for morality. The contention is that ethics requires some superhuman sanction, and that without this human beings, abandoned to their own inclination, will let selfishness run riot, each individual taking as sole motive of action the attainment of pleasure for him or herself. And hence virtue, declares the Theist, is dependent on belief in God and cannot exist without it. Thus speaks the Theist, and those who care more for catchwords than for logical conclusions may accept his *ipse dixit*. Those however who rank logic above rhetoric will prefer first of all to examine the facts. And the truth is that with man and all the animals above a certain low level, attainment of selfish pleasure is *not* what is paramount in moving the individual to action. What really reigns supreme in nature is care for the

¹ See *Letters of John Stuart Mill*, edited by Hugh Elliott, London, 1910, V. II, p. 380.

welfare of the offspring. And self-sacrifice to that end, not sterile self-gratification, is the law of life. This fact stares us in the face, manifest to all not blinded by their pre-conceptions. Altruism then, which we find can and does extend beyond one's own family and even beyond the human race, is a fact, and the morality based on this fact has and needs no other sanction than that of the human conscience—individual and collective. Indeed to seek other sanctions for virtue is to destroy it at its very roots. As Archbishop Whately said: "Honesty is the best policy, but he who acts upon that principle is not an honest man." Atheists admit they cannot force a man to be virtuous by promises of heaven or threats of hell. If a man tells us he is a complete egotist having his own pleasure as his sole aim in life, we have no way of convincing him that he ought to feel otherwise. But we do know for a certainty that under natural conditions—conditions which, alas, have been much denatured through religious influence—the men who live for themselves alone will be gradually weeded out of the racial stock. We know also that branches of the race in which each man cares solely for the welfare of himself and his own progeny will not survive in the struggle for existence. A tribe cannot survive in intertribal competition unless it is imbued with a certain amount of the spirit of solidarity by which an individual is willing in case of necessity to sacrifice himself for the sake of the community.

The Atheist, then, is far more sanguine than the Theist as regards the possibilities of purely human virtue. And believing it to be of the utmost importance that the development of these possibilities be helped instead of being hindered, he feels that the world has need of Atheism. It has need, that is, of looking facts in the face and not being misled by sonorous phrases and maudlin sentimentality. It must resolve that the meet and not the meek shall inherit the earth. If there is to be progress, moral, intellectual or physical, in the human race, it must forget the Sermon on the Mount and contemptuously reject the Socialistic demand for "equality of opportunity." Preferential treatment and preferential reproduction of the most fit must be the corner stone of the social edifice. We must not put forward as an ideal the much vaunted Golden rule which, as has been well said, would wreck any race that seriously tried to apply it. We may not spare the life of a murderer or of a man-eating tiger merely because if we were in his predicament we would desire

to be spared. The community must disregard the customary cant about "the sanctity of life" and "lack of moral responsibility" in dealing with a criminal, that is with a man or woman in whom egotism prevails over innate virtue to the extent of producing an aggression upon a fellow citizen. Human weeds must be destroyed that fair flowers may bloom in the garden of life.

On the other hand we must guard against degenerating into a race which can live only in a moral or physical nursery. And hence we must bear in mind that, as Mr. Wiggam remarks (in *The New Decalogue of Science*) "vice purifies a race because it kills its victims. It thus leaves the strong, the robust and virtuous to hand the torch of heredity to the man unborn." We must not be too anxious to shield a fool from the consequences of his folly. The state must not endeavor to "suppress vice" or to enforce prohibitory laws designed to deter a man from doing something that harms him alone. It must raise its revenue, as far as possible, not by taxing the earnings of the industrious but by licensing at a high tariff the vices of their degenerate fellow citizens. On the positive side we must cultivate pleasure, not eschew it, and must regard as a gain to humanity every enjoyment not injurious or degrading. We must endeavor to practice and to preach all the manly virtues without forgetting to cherish those more particularly feminine. Priestly virtues indeed we must disdain: a rational philosophy of life has no place for meekness, asceticism, alienation from the world, the flesh and the bath tub. But whatever is good and wholesome we shall applaud: integrity, sincerity, fidelity to one's engagements, kindness (towards the lower animals as well as toward our own kind), chivalry toward the weak, courage (though not the foolhardiness so much in favor which risks life for no worthy end), industry, initiative, self-reliance, staunch defence of one's rights coupled with respect for those of others, love of the good and hatred of evil (the former being impossible without the latter)—all these in the community of the future will be honored by every organ of public opinion. Press and pulpit will have as their aim the focusing of attention upon vital truths and noble deeds, and will no longer be devoted to making heroes of buffoons and criminals and to expounding the platitudes of impossible sociological and religious creeds. Thus and thus only can man make his Utopia a reality.

And with this perspective—a theory of life and progress more hopeful, more inspiring and more beautiful than anything Theism has to offer—the Atheist may say with the poet:

“And by that light, now, mark my word, we’ll build the Perfect Ship.
I’ll never last to judge her lines or take her curve not I,
But I have lived and I have worked”—no thanks to aught on high.

WAS THE BIBLICAL MANNA AN ANIMAL PRODUCT?

BY H. S. DARLINGTON

WHAT was that "manna," that marvelous food which is purported to have sustained the Hebrews for forty years while they wandered in the wilderness of the Sinaitic peninsula? Was it the dried sap of a plant, or was it some animal substance produced by an insect? The theologians, linguists, botanists and the geographers have all made their guesses upon this problem, without giving a satisfactory answer to it. The writer proposes to look into it from the ethnological point of view, by finding out what some desert-dwelling tribes of the present day live on, and then comparing such edible substances with the biblical description of manna.

The usually accepted explanation is that manna is a vegetable product, occurring normally in nature, and even entering into commerce. Annually upon the twigs of certain species of evergreen trees and shrubs, known as "tamarisks," a saccharine-resinous exudation appears. The tamarisks grow on salt deserts by the seashore, or in infertile districts in sub-tropical regions of the eastern hemisphere, as for instance, along the shores of the Mediterranean Sea. They will withstand great drouths. On the north side of the sea, the manna-ash tree is regularly tapped for a sugary-product sold as "manna." When sap is freely flowing in the tamarisk shrubs, a species of stinging insect, the *coccidae*, punctures the thinner barks, and feeds on the sugary sap. These *coccidae*, like the aphides, are often "milked" for their sweet secretions by ants. The wound made in the twig does not immediately heal, but some sap runs out in a tear-like form, and soon hardens into a small roundish pellet, thus sealing up the puncture. This dried sap from Persia and Arabia enters into commerce under the name of manna. The color is light brown, the taste is sweetish, the odor is senna-like, and

the size varies from that of a mustard seed to the dimensions of a coriander seed. It is used as a mild purgative. The manna of commerce is not solely derived from the tamarisk shrub, for oak-manna is collected too. It is found in some localities in the form of agglutinated tears clinging to twigs. Chemical analysis shows that oak-manna is almost entirely a nutritive type of sugar.¹ A recent issue of a Chicago newspaper prints a dispatch from Jerusalem stating that it has been discovered that the tamarisk-manna is the secretion of the coccida which lives on tamarisk. The dispatch as printed is absurd—the coccida does not secrete the hard pellet; for if it did, it would be in need of a stronger purgative than manna.

Other students of this problem say that the total amount of tamarisk-manna is too inconsequential to have fed more than a few hundred persons on the desert. Paul Haupt endorses the view of Littré, and states that the manna of the ancestors of the Jews was a nutritive lichen, especially the *Lecanora esculenta*, known as manna-lichen, which has served as food for considerable numbers of men when drought and famine struck the steppes anywhere from Algeria to Tataria. Fragments of manna-lichen carried by the wind resemble grains of wheat, but they may vary in size from that of a pea to a hazel-nut.² These edible lichens contain starchy substances, and in some cases, some saccharine matter too. Haupt believes the Hebrews mixed manna-lichen to sweeten it, with tamarisk manna. It is necessary to conjecture this mixing because the manna-lichen, being mainly starchy, is hardly sweet enough to be worth special mention as given in the biblical description.

The biblical account of the appearance of manna on the desert, as given in the sixteenth chapter of Exodus, reads: "And when the dew that lay was gone up, behold, upon the face of the wilderness, there lay a small round thing, as small as hoar frost on the ground." Then we learn that it did not keep more than a few days when it "bred worms and stank." Furthermore, it could be gathered every morning, and was in fact necessary, because "when the sun waxed hot, it melted." It was called "manna, and was like coriander seed, white; and the taste of it was like wafers made with honey." Some additional information is given in the second chapter of Numbers. The color of manna was that of bdellium. Apparently that means

¹ Ency. Brit. 11th Ed., Art. *Manna*, Vol. xvii, p. 587-588.

² Dr. Paul Haupt, *Manna, Nectar and Ambrosia*, Proc. Am. Philos. Soc. Phila. 1922, Vol. lxi, p. 227 sq.

that it was white with a yellowish or amber cast. Moreover, it was beaten in mortars, and baked in pans, and cakes were made of it; and it had a pleasant oily taste. "When the dew fell upon the camp in the night, the manna fell upon it." Still another thing we learn from the bible, is that the appearance of manna was coincident with the appearance of quail, which suggests that the manna attracted the quail, as if manna was their normal food at some season of the year. At length the Hebrews lost their taste for manna, and then it became loathsome to them. Finally, when they were able to grow their own grain, they quit using manna, and it miraculously ceased to appear. The fact that they ceased to use it when they had grain, and the fact that it was wormy, and "stank," and was loathsome, goes to prove that it had very few qualities to commend it as a food, even if it was heavenly bread. Of course it never ceased to appear, but the later descendants of those early pioneers, lost track of its identity, by which oversight, they created our problem.

Manna-lichen seems hardly to conform to the description of the biblical manna, except that it is found in the desert, is often roundish, and very plentiful as compared with tamarisk manna. Tamarisk-manna or even oak-manna seems to conform to the biblical specifications in these particulars: it is small, roundish, or oval, whitish or yellowish brown. It is sweet to the taste, and is frequently gathered in the morning; it is nutritive too. Very likely it can be beaten or ground in a mortar, and molded and baked into cakes. On the other hand, there are a number of potent reasons militating against the identification of the tamarisk-manna with the biblical. In the first place it is not normally found on the ground, but is found clinging to the twigs of small trees and shrubs. It does not make its appearance only at night after the dew has fallen. Its presence in the twigs is not coincident with the flocking in of quail; and quail feed off the ground rather than off the branches and twigs of trees. Tamarisk manna is hardened and made permanent in form by reason of the heat of the sun, drying up the liquids in the sap, and it is not melted regularly off those twigs, to run down the tree trunk each day. It might melt or dissolve in rainy weather, but not after the sun has driven away the clouds. In fact, oak-manna is often gotten by soaking the twigs in hot water to dissolve the dried globules of sap. Then too, tamarisk-manna, like sugar, will keep rather indefinitely, and will not on occasions, and on every other day

or so, become infested with vermin. That some insects do actually get imbedded in the sticky sap and become mummified therein, is certain; but these accidents are somewhat rare. The little insect in such cases would be dead, and could hardly be said to breed worms. It seems that this biblical manna must have contained the eggs or larvae of some insect or worm, even when freshly gathered. It is inconceivable that tamarisk-manna after clinging to the twigs for weeks or months, should upon being handled by man, begin to putrefy in a few days, and give out a terrible stench; for it being mainly saccharine matter, will no more rot than starch or rock-candy. Putrefaction or fermentation would have taken place while the drop of sap was still liquid, prior to its hardening. There is nothing so positively vile about tamarisk-manna, or even manna-lichen, as to make men loathe it. We are forced, there, to discard the vegetable-sap explanation, and to seek out some other natural product of the desert regions, that is edible.

The Shoshoni and Ute Indians of Nevada were living virtually on a desert, where food was so scarce that not infrequently, they starved to death in the winter. They gathered live ants, dried them and ate them. Ants and grasshoppers were parched with hot embers, and used to thicken soup. In drier parts of Central California, dried chrysalides, as well as worms were a delicacy;³ the Maidu ate the larvae of wasps.⁴ The Mohaves on their desert supplemented their diet of seeds, quail and rabbit with insects. At the brackish Owen's Lake, the larvae of flies were scooped from the water and eaten by the Indians. Lizards, snakes, grasshoppers and crickets were relished in Lower California, where aridity holds sway.⁵

In South America, the Resigero tribe have special baskets for edible ants. The Issa-Japury tribe will eat the grubs of wasps and bees, in fact any larvae.⁶ Australia is more desert than anything else, and natives are driven to extremities to get food. Moths are pounded and smoked, so that they will keep for several days before eating. The taste is like that of a sweet nut; and even dogs will fatten on such food. Ant's pupae or "eggs" are also a favorite food,

³ H. H. Bancroft, *The Native Races of the Pacific States*, San Francisco, 1886, vol. i. p. 374.

⁴ Dr. A. L. Kroeber, *Handbook of the Indians of California*, Wash., 1925, Bull. No. 78. Bureau Am. Eth. p. 409.

⁵ Bancroft, *Op. cit.*, p. 560-561.

⁶ Thomas Whiffen *The Northwest Amazons*, N. Y., 1915, p. 97, 130.

with or without ants themselves. Many kinds of grubs are eaten.⁷ They make a drink from crushed ant-larvae, but this drink is said to be sourish,⁸ probably on account of fermentation. In South Africa, the Bushmen have been driven onto the Kalahari desert within historic times. No small share of their food is "Bushman-rice," as it is called by the Dutch settlers. It is the whitish chrysalides of the white ant, obtained from ants' nests. The natives dig out the nests and sort out the sizes of the larvae on a kind of grass sieve. They only gather what they need for the day, just as the Hebrews gathered their manna. The Bushman-rice is taken to the caves and roasted and eaten. The natives get fat on insect food, it is said.⁹ In semi-arid Central Australia, there is a remarkable honey-ant which lives in red sandy loams. The women dig out these nests to a depth of five feet or more, and collect the ants. The honey-ant itself is a modified worker of the colony, so overfed that its abdomen swells to the size of a marble, in consequence of the honey stored within. The abdominal walls are reduced to extremely fine membranes through which the honey can be seen. It appears that the inflated ants in this phenomenal way, provide for the needs of the colony during the barren season, acting in the capacity of living barrels that can be tapped as required. When eaten, the first sensation the palate receives, is a distinct prick of formic acid; but this is both slight and momentary, and is followed by a rich flavor of pure honey.¹⁰ As the reader now probably realizes, the writer's thesis is that the manna of the bible was none other than the roundish to oval-shaped, whitish to yellowish-brown larvae of the ants that inhabit the arid to semi-arid regions of Arabia-Petra. In short, manna is "Bushman-rice."

"Ant-eggs" as children call them, are really ant-cocoons—the pupae of ants asleep in a silken shroud. Sometimes the ant-eggs are simply the matured and naked white-skinned larvae that have never received a silken wrapper about them, for some reason. Ant colonies collect into "nests;" as many as two hundred being found in a forty acre area in places. The ant is a nectar-eating, sap-sucking, semi-carnivorous insect, requiring considerable moisture in its environment, and yet it cannot live in swamps. It will burrow

⁷ N. W. Thomas *Natives of Australia*, London, 1906, p. 110-111.

⁸ Hermann Klaatsch, *The Evolution and Progress of Mankind*, London, 1923, p. 125.

⁹ G. W. Stow *The Races of South Africa*, London, 1905, p. 58-59.

¹⁰ H. Basedow, *The Australian Aboriginal*, Adelaide, 1925, p. 146-147.

into the earth fully seven feet to secure wet faces of earth that it can suck or lick for the needed moisture. Living underground in this way, it can endure and thrive in a land of pronounced aridity. In arid climates, where there is a thin overburden of earth upon beds of calcareous and sandy stone, as in Arabia Petra, the hot sun dries out the soil to a considerable depth, so that, it appears, the ants have to find their needed moisture in the evening dews and damps that condense from the breezes blowing in from the nearby sea. While they were in Arabia Petra, some authorities conjecture that the Hebrews rarely ever got more than fifty miles from the coast, and frequently were no more than fifteen miles.

In an ant colony, that branch of the workers known as the nurses, go about their care of feeding and massaging the ant larvae in various stages of development. These larvae are roundish, legless, footless, helpless maggots, with very small heads. When the larvae are full grown, they have enlarged from the size of a pin-point to that of a wheat-berry, nearly a quarter of an inch long. The size varies with the species. While developing, the larvae are stuffed to the limit with the syrup liquid that has been stored up in the "animated pantries," and which is fed or possibly forced-fed into the larvae by the nurses. The nurses vary the amount of food given to the individual larva, so as to pre-determine sex, and especially to keep a host of them at the same stage of evolution on the same day. The development of the maggot is delayed or hastened according to the weather's humidity, or the temperature. At maturity the larvae generally spin oval-shaped cocoons about their bodies, but many do not do this. The cocoon is white in color, or of an amberish white. The larvae having no cocoons are white, although the color of the food in certain localities may give them a yellowish, or possibly some other shade. Within the cocoon, the larvae pupates. It passes through a chrysalis phase of evolution, in a silk-lined limbo, to emerge in time into its heaven, as an angel of an ant. The period of pupation ordinarily takes from three to four weeks. It varies with the weather; and one observer says 102 days elapsed before the pupa emerged as an ant. The cocoons are attended to faithfully by the workers, who carry them at times from room to room, or from level to level, as the temperature or the moisture or time itself may demand. At times the nurses see fit to bring the

cocoons to the surface, and leave them exposed for a while. We can only conjecture what this is for.

The writer has observed in Oklahoma that cocoons are brought to the surface, in hot dry weather, when a moist and foggy wind blows in from the south, as it commonly does for a day or so preceding a rain. At other times it would seem that cocoons can be found at the surface, on the first bright day after a rain. It is likely that the period of exposure does not exceed an hour and a half, for the workers are busily engaged in a continuous operation of bringing up new cocoons and taking down the exposed ones into the formicary, or ant-hill. The air in some ant-colonies is said to be heavily charged with carbon-dioxide. These cocoons that are brought to the surface seem to be in need of moisture that can be absorbed hygroscopically out of the humid air; or else after a rain, the cocoons are too wet, and have to be dried out a bit. Again they may be brought up for the sake of freeing them from excess carbon-dioxide, and for giving them an oxygen bath. We do not know for certain. When the sun is out hot and scorching, the cocoons soon disappear off the ant-hill. Obviously, this is necessary because the pupa being fairly stuffed with liquid food, would quickly shrivel up to a hard sugary lump in bright sunshine, inasmuch as the cocoon is quite thin, and unquestionably porous, and the larva and pupa are fairly translucent. The matured ant has an opaque carapace as its body, but the eggs, larvae and pupae must have plenty of moisture to keep themselves and their interiors liquid.

Many insects spin silk-threads from internal secretions. Chemically considered, silk is composed of an outer albuminous coating over a horn-like albuminoid cord. The outer covering is soluble in hot water, and all of it is soluble in mineral acids and strong alkaline solutions. It is highly hygroscopic; that is, it will give up contained water under drying conditions, and will reabsorb it again under reversed conditions. When dry and devoid of water the silk threads, or silk-cocoon, is rather stiff in texture, but becomes pliant when moist. Spider-webs are made of silk-threads. When used for cross-hairs in surveying instruments they sag on humid days, and then grow taut when dried out. It is probable that this hygroscopic property of silk makes it possible for cocoon-spinning insects to live in places of little rain, or even of pronounced aridity. The skin of a pupa is like a parchment in appearance, and the silk of the

cocoon is in contact with that parchment. Parchments frequently have the property of osmosis, by which virtue, moisture can pass through the parchment without puncturing holes in it. It is quite likely that the purpose of the cocoon in addition to being a protection, is to take up atmospheric waters, and pass them on through the parchment to the chrysalides within. When the cocoon is water-logged as after a rain, it may often have to be brought to the surface to be dried out, and then when it is too dry, so that the pupa suffers, the cocoon is brought up to drink in the dews and damp. After exposure, the cocoon is taken down again before the hot sunshine can dissipate what water has been absorbed from the air and the falling dew. In that sense, the "manna" melted or disappeared when the sun waxed hot; and it made its appearance "when the dew fell upon the camp in the night."

Silk being an albuminous substance, and an animal product, can be digested by many creatures. Even man's body absorbs the surgeon's silk-thread. It is said that ants will even eat spider's silk. Fishes are fond of the dried larvae and the shriveled ant-cocoons that bird-stores sell. Snakes and lizards are also fond of larvae. Birds of the pheasant family, particularly quail, are especially fond of ant-cocoons. This is an established fact. The entire cocoon, inside pupa, and outside silk must be readily digestible.

So much for ants on deserts, and man's eating of ant-cocoons, and their sugary content, and the appearance of cocoons upon the ground in the dews of night, and their disappearance in the heat of the day, and the presence of quail in ant-infested regions. Now we have to hypothesize that the Hebrews on the whole were quite unfamiliar with ants and their habits; and on that account they thought the cocoons were tiny loaves of bread sent to them by Jehovah. Since the bible tells us that those who felt the bondage to the Egyptians most, were working in the clay-pits and making brick, we can conjecture that they lived in a wet and boggy locality, where ants were very rare. Again those that farmed, probably irrigated, and drowned out or discouraged ants. Or again, the ants got all the moisture they needed from the sub-soil and alluvium in the lower plains of the Nile where the Hebrews are supposed to have lived; and on that account, they rarely brought up their cocoons to the surface to be exposed during the pupating period. At any rate,

when they came upon great numbers of these white pellets on the desert, they asked in ignorance "What is it, *manna*?"

In the very early stages of pupation it is likely that the Hebrews failed to see the "vermin" that was within the cocoon; for then being legless with only a spot for a head, it would not be a prominent characteristic. The manna was gathered in pots, and was "seethed," that is, it was boiled. Others dried the stuff it would appear, and then mashed it up in mortars. As the stage of pupation advanced from day to day, the ant or the "vermin" in the cocoon took on more definite form; and it was also discovered that "seethed" manna gave forth a terrible stench when allowed to stand a day or two. Workers in the early stages of preparing raw silk for the markets, are well aware that the *sericin* or outer albuminous coating of the threads, is separated from the core of the thread before spinning on reels. The raw silk is seethed in hot water, or soaked in warm water for several days to loosen the sericin. In European towns these soaking-vats are commonly outside their bounds, because of the unbearable stench given off by the fermenting sericin. Truly then, seethed manna "stank" after the second day, or the third. Therefore Moses "decreed," in pursuance to actual practice, that only enough manna should be gathered as would suffice for the day's needs. But the supply for the sabbath had to be gathered the day before, in anticipation of the fourth commandment of the decalog which as yet had not been received. And finally when the stage of pupation was far advanced in all the colonies that were sought out by the Hebrews, they naturally came to loathe the manna that had fallen from heaven. Then it seems they must have had to resort to quail, which flew up from the Gulf of Akaba where even to this day they are plentiful. Quail were so numerous that they gourmandized on them, and fell sick as a consequence, as related in the eleventh chapter of Numbers

The bible says the Hebrews marched out of Egypt with 600,000 men in "harness," or as we would say nowadays, "in warrior's equipment." The figures are absurd; for with such an army, they could have conquered Egypt, and would not have been fought to a standstill for some time by a mere handful of Amorites living in a few villages in the hills. Probably not over 2000 men were "in harness," and the whole number who went out to return to their brethren living on the borders of Edom and Moab, did not exceed

6000 people. It is only in regard to the preposterous figures of the multitude who were fed part of the time on this manna, that this thesis fails seriously; but in that weakness, all the other theories examined also fail. The identification of manna with ant-cocoons, and ant-pupae, meets with very nearly all the "specifications" laid down in the bible. It fails only on the side of the preposterous statements, such as 600,000 warriors, thus implying nearly 2,500,00 people; and it fails to meet the biblical implication that it could be found every day in the year; and again it fails in the piously fraudulent assertion that the "manna" failed to appear any more upon the ground after the people gathered their first grain-crop. The weaknesses in the thesis really do not militate appreciably against its acceptance.

HARDY, THE GREAT PAGAN

BY LLOYD MORRIS

THOMAS Hardy, novelist and poet and pagan, will go down to posterity in company with Euripides as a literary force of sombre power and fascination. With him will also go the verdict of his contemporaries that the greatest tragedy of Hardy, was Hardy; acclaimed for his genius, berated in his expression of it, and mistaken in the conclusions to which it led him. Greatly loving his fellow-men, he stripped with his art, life's last illusions, as he thought, to their bleached gaze.

Not all authors of the pessimistic school are unqualifiedly pessimistic; some one of their works is happily free from tincture of imputed despair; somewhere a constructive intent is revealed to bestow warrant on an otherwise disintegrating artistry. But Hardy was the complete tragedian.

Even his bucolics under the greenwood tree are overcast with a pneumbra from the darker aspects of life pressing out its incrutable issues. Into the jocund revelry of his woodlanders creeps the sorrowful under-murmur of the world; slow, sad modes of Destiny weave into the choric song; and over all the idyll lies at last a poignancy more appalling by reason of its bright setting, than the ominous malevolence that broods and bides in nativeness over Egdon's gloomy heath.

With incomparable impressionistic artistry Hardy show us things as they seemed to him to be. With painful interpretation he infers that is how they really are—bidding us weep for Virtue as a fortuitous barque adrift upon a fortuitous sea: leaving us staring wildly without hope in a universe where Good is destroyed by Evil, and the conquest of Virtue is a world-purpose.

The declared felon strokes of Fate have been the theme and

vision of a countless dead. To this aspect of life some rendered tribute of philosophical acquiescence, and some railed inordinately; still others soothed themselves with songs of rue and hydromel, wherein the dark day rings at last to evensong and the tortuous river comes to end at the sea.

To the drama of existence as he saw it played, Hardy's response was neither philosophic acceptance nor mouthed puerilities at heaven. First, last and essentially he was a poet on whose heart-strings life played with iron fingers. His novels were the music of his pain—an epic threnody for humanity such as might have pealed from fettered Prometheus. If at times the artistry stuttered, it was the incoherence of a passionate sense of inability to express adequately and remedially a protest of lacerated emotion.

For the Romanticists, only the transcendent postulate of benign spirituality can satisfy the factual equation of life. Possessed of that quality, Hardy had taken noble rank among those of them who consider the microcosm in the light of the cosmic. To them, the most seemingly dreadful examples of disparity in human fortune appear, not as discontinuous circumstances evolved at parturition and devolved in corporeal death, but as reverberations from eternity. In them they witness a proceeding upwards of human entities—not by way of pagan retribution or Plotinic expiation; but through acceptance of life's dolours as opportunities presented for spiritual integration.

Writing from this larger apprehension of a purposive continuity in human life, Hardy would still have compelled our tears with his sad stories from the piteous fields of human effort. Yet anguished though the relation might be, it would not have left us at its ending with repugnant horror, despair or a negative exhortation to merely valiant endurance. On the contrary, its close would have invoked our importunities for him again and again to repeat his tales of human woe; which left us inspired with the apprehension of a benignity moving among human affairs. Then, looking athwart the world of men and things, and marking individual examples of greivous circumstance, our vision would have been of them as workings of the fermentative leaven of an ultimate good. With an inner eye we would perceive it rising to its hour of glory—not necessarily here in this wasting day; but as the usufruct of an environment sounding perhaps to more alien tongues under further skies.

Then, standing with him in fancy in the morning light beneath the gallows-tree, beside his fictional character-creation of Tess the murderess; it would have been in common belief that to the woman with pinioned hands was the last laugh; and to the "President of the Immortals" the realization that was He had been the sport. For though His human hound, Alec, had piteously ravished the woman's flesh, he could not touch her soul; though the hangman dislocated her neck, he had no power over her discarnate part. And not the "Hierarch" Himself could expugn the ethical inspiration to perhaps but one human spirit, who might come to knowledge of the lamentable story of this woman.

Without an inner vision unifying existence, Hardy must be placed among the chiefest of those brilliant paradoxes, the Romantic-Realists; who endeavor to measure the cosmic by the microcosm; and, like children trying to do a sum, are petulant, abusive or sorrowful because having left out a factor, the sum won't come right, but leaves a remainder.

Even logic fails them, for it could be eyes to a blindness which does not perceive that if Evil have its hour of power; then under the law of possibility, no less must be conceded Virtue: that if the incidence of the malign operate with material visibility; the invisible operations of a spiritualization may therefore not validly be denied.

With the yardstick of finity, Hardy essayed to scale the infinite. The discrepancy between his measuring-rod and eternity he stigmatized as a divine deficiency; wherein he beheld evil stalking triumphantly over the world on two legs a greater force than good; and innocence singled out to be the panting sport of a divine hunting. It seemed to him as he watched that to be evil was to have the seeds and quality of triumph—or at least immunity from woe; and to be virtuous was to invite calamity: that behind all the puppetry was the Showman of the Immortals who with Rabelaisian gout took his vicarious amusements of rape, murder and anguish and, then, yawning, put his toys away to sleep in the vault of the D'Urber-villes; to incinerate in limey pits of shame; to hang on a nail behind mean doors, or, toss greasy caps into the air and vociferate mechanical huzzas to the litany of a broken marionette.

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Published at the beginning of JANUARY, APRIL, JULY, OCTOBER

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