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Transpersonal Psychological Observations on Theravāda Buddhist Meditative Practices[1]

by James A. Santucci

I
Manovijja and Transpersonal Psychology

Theravāda Buddhism, like all major religions, may be studied from two general perspectives:

(a) that which is predominantly descriptive and discursive, such as anthropology, archeology, economics, history, philosophy, and ritual; and

(b) that which is predominantly apologetic and critical, that is, a discussion which is primarily concerned with proving the religion's

(1) validity, worth, and inspiration, or

(2) lack of (1).

The second perspective (b) has received the attention of the late Richard Robinson, who, in a series of articles appearing in *World Buddhism* (1970-1972), raises the provocative[2] question concerning the possible responses and changes that Buddhism will undergo when it comes to terms with the "human sciences." He observes that Buddhism became spiritually dogmatic, although it originally accepted the expendability of its doctrines,[3]—a position in complete agreement with the assumption of the sciences that knowledge has a non-finality about it (Ibid., pp. 205, 235). Because "dogmatic apologetic is largely evasive and serves no good purpose" (p. 235), Buddhism must purify itself from the "dotage of the ages"[4] (Ibid., p. 205) and move on to new discoveries. This final observation made by Robinson fits into the context of this paper but in a way that does not presume that "Science" has the answers to which Buddhism must respond and adjust. Buddhist 'psychology' (*manovijja*) provides a highly developed analysis

of meditation and the special consciousness that arises from the practice. Western-orientated psychology has only recently begun investigating this phenomenon, and readily admits its deficiencies in this area. Therefore, in light of Robinson's observations, the psychologies are more like equal rather than unequal partners. But there is also, on the one hand, a certain inertia on the part of the Buddhist faced with the challenge of investigating empirically what Tart calls the "discrete altered state of consciousness" (1977:14) of the meditative experience, and, on the other, the assumption of the Western-oriented psychologist of the incompatability between science and "mysticism." The inertia of the Buddhist applies to *manovijja* as well.

There can be no doubt that the last significant advance in this field lay in the development and analysis of the perceptual process (*citta-vīthi*), a development which first appears in the works of Buddhaghosa, but most likely based upon the earlier post-Abhidhamma commentaries.[5] As a result of this stagnation, modern Buddhist authors who devote themselves to the study of *manovijja* take a primarily fundamentalist approach.[6] The reason for this change of attitude from active observation to consolidation is, I would suppose, one of satisfaction with the findings contained therein. These findings center around the acceptance of the perfectibility of man and the means by which this can be accomplished (Piyadassi Thera, 1964:5-6).

This is, of course, contrary to the prevailing Western view of the open-endedness of knowledge and the inability of man to completely capture it (Polanyi, 1961; reprinted in Ornstein, 1973: 23-24). Despite this contradiction in opinion on man's potentiality of achieving an ultimate goal, there has developed in recent years a movement in psychology which approaches the Buddhist view half-way. This movement is known as Transpersonal Psychology and it is defined as an area of research concerned with

> . . .those ultimate human capacities and potentialities that have no systematic place in positivistic or behavioristic theory ("first force"), classical psycho-analytic theory ("second force"), or humanistic psychology ("third force"). The emerging Transpersonal Psychology ("fourth force") is concerned specifically with the *empirical* scientific study of, and responsible implementation of the findings relevant to, becoming, individual and species-wide meta-needs, ultimate values, unitive consciousness, peak experiences, B-values, ecstasy, mystical experience, . . . maximal

sensory awareness, responsiveness and expression, and related concepts, experiences, and activities. (Tart, 1977:2)

The development of such a psychology is necessary if the "*whole* human being" is to be understood (Tart, 1972:7). Furthermore, the outcome of the numerous works on discrete altered states of consciousness published in the field[7] has led to a recognition that a clash in paradigms need not end in irresolvable conflict and mutual rejection (Tart, 1971:95-97), but rather to an expansion of our concept of what is possible in man (Ornstein, 1972:95-101). This is significant because meditation is now presented in a new light. Previously, the investigator of meditative practice and literature was only equipped to accept or reject the efficacy of such a practice on faith alone, or simply suspend judgment on it. Psychological investigations have now demonstrated that meditation does produce verifiable physiological alterations resulting in altered states of consciousness. In Theravāda Buddhist meditation, two qualitative changes in awareness occur: (1) restriction of input processing or awareness, and (2) opening-up awareness of the external environment (Ornstein, 1971:144f; 1972:192). The first phenomenon is produced by that method of meditation known as 'cultivation of calm' (*samatha bhāvana*); the second is produced by mindfulness (*sati*) of varying types—the four foundations of mindfulness (*sati-paṭṭhāna*) and those detailed in *Vm* 7 and 8—and by 'cultivation of insight' (*vipassanā-bhavanā*). The opening-up awareness, known as 'penetrative knowledge' (*paññā*) or sometimes 'perfect knowledge' (*aññā*), proceeds from mindfulness and/or calm (*Vm* 19-22). Because of limitations of space it will not be possible to include a discussion of Theravāda meditative practice.[8] Only the empirical observations of this practice will be outlined in the next section.

II
Empirical Observations on the Meditative Experience

Although the scientific study of the meditative experience is still in the infant stage, some important observations have been established from the purely physiological level to the neuro-physiological and cognitive levels. The effects of meditation on the physiological make-up of the individual have been summarized by Wallace and Benson (1972:125f.) to include reduction in oxygen consumption, carbon

dioxide elimination, and respiration; an increase in the acidity of the arterial blood; a decrease in the blood-lactate level (blood-lactate levels rise under stress); a reduction in the heart-beat rate; and an increase in the resistance of the skin to an electrical current.[9] These findings suggest little resemblance with either sleep or hypnosis. Either the rate of physiological change will be different or the reactions will be directly at odds. For instance, oxygen consumption only decreases significantly after a period of several hours of sleep. In the hypnotized state the heart beat, respiration, and other metabolic patterns are subject to the operator's desires and instructions on the subject (*Ibid.* 130).

These differences also exist in the functionings of brain-wave activity. EEG (electroencephalogram) recordings have revealed the presence of alpha rhythms with occasional theta-activity during transcendental meditation (*Ibid.* 130).[10] Kasamatsu and Hirai (1966:505), in the EEG studies of Zen meditators, have observed four stages in the meditation episode:

1. Slight alpha activity in spite of opened eyes;[11]
2. Increase in the amplitude of persistent alpha waves;
3. Decrease of alpha frequency;
4. Appearance of a rhythmical theta train sometimes occurs during this final stage.

Wallace and Benson (1972:130) suggest little resemblance of meditation with hypnosis from either a physiological or neurological standpoint. Kasamatsu and Hirai (1966:513) on the other hand do observe some similarity between the first three stages of Zen meditation and the hypnagogic state (transition and borderline period from wakefulness to sleep) and hypnotic trance, but the differences seem to be more significant than the similarities (Kasamatsu and Hirai: 506f.).

Prominent alpha activity has been observed in *yogins* practicing absorptive meditation (*samādhi*), but, unlike the Zen practitioners, they were oblivious of all external stimuli (Anand, Chhina, and Singh, 1961:516-517).

Because of the similarity of Zen meditation with *sati* and *vipassanā* practice, and the practice of *samādhi* with Buddhist *samatha* cultivation, we could presume similar results, that is, prominent alpha activity and possibly theta activity at the access or threshold (*upacāra*) and absorbtive (*appanā*) levels of concentration.[12]

A related observation on alpha activity in meditation has been that of a significant reduction in alpha blocking. Anand, Chhina, and Singh (1961:517) report no blocking at all in the meditating yogins, and

Kasamatsu and Hirai (1966:507) report a reduction in the Zen meditators. Alpha blocking involves an interruption of the alpha rhythm by means of an external stimulus, such as a loud noise. In normal non-meditating subjects restoration of alpha activity will occur in approximately seven seconds (Burns, 1966:63). Kasamatsu and Hirai, however, have recorded only two to three seconds of alpha blocking on the part of the Zen meditators employed in their experiment. Furthermore, the authors have demonstrated that although the amount of time required to restore alpha activity in non-meditating subjects decreased rapidly when the same stimuli were repeated at regular intervals, the length of time required to overcome blocking remained constant in the Zen meditators (Kasamatsu and Hirai, 1966:507). This observation has led to the conclusion that the perception that is developed in meditation is different than normal perception in the sense that one (the former) is deautomatized while the other is habitualized. Habituation refers to the adapting process of cognition that filters or tunes out awareness of a repetitive stimulus or object. Automatization or habituation of the perceptual or thinking process is merely an extension of the observations of Harmann (1958) on motor behavior. Just as learning a motor skill (such as driving a car or engaging in a sport) requires the appropriate actions to be automatized, hence not in the sphere of consciousness, so too the same constant stimulus will cause the nervous system to tune it down or out from our consciousness (Ornstein, 1971:178f.; 1972:29-30, 130-131).

Normal states of consciousness, that is, the normal patternings of consciousness in the waking state (Tart, 1977:14-15) perform a selective or filtering function as much as they do a gathering function. C. D. Broad states:

> that we should do well to consider much more seriously than we have hitherto been inclined to do the type of theory which Bergson put forward in connection with memory and sense perception. The suggestion is that the function of the brain and nervous system and sense organs is in the main *eliminative* and not productive. Each person is at each moment capable of remembering all that has ever happened to him and of perceiving everything that is happening everywhere in the universe. The function of the brain and nervous system is to protect us from being overwhelmed and confused by the mass of largely useless and irrelevant knowledge, by shutting out most of what we should otherwise perceive or remember at any moment, and leaving only

> that very small and special selection which is likely to be practically useful. (quoted in Huxley, 1954:22-23)

This "data reduction" has been demonstrated in an experiment on the visual range of a frog by Lettvin, Maturana, McCullock, and Pitts, of MIT (Ornstein, 1972:21-23). In this experiment, only four messages were responded to by the frog out of the potentially thousands of visual pattern stimuli: the general outline of the environment (sustained contrast detectors), sudden decrease in light (net dimming detectors), and small dark objects coming within the visual field (net convexity detectors).

Other experiments in perception demonstrate not only the selective function of the brain and nervous sytem, but also the presence of such factors as past experience, action and probability, which contribute to the reification of the perceptual stimulus. This was demonstrated by Ittelson and Kilpatrick (1951:50f.) by setting up a number of visual patternings that cause so-called optical illusions.

A similar line of investigation appears in the work of the transactionalist psychologist George Kelly (1955), who argued that each person views his world through transparent patterns or personal constructs. By these constructs man is able to formulate a behavioral pattern which is "explicitly formulated or implicitly acted out, verbally expressed or utterly inarticulate, consistent with other courses of behavior or inconsistent with them, intellectually reasoned or vegetatively sensed" (1955:1:9).

Contrary to this "normal" state of consciousness is the deautomatized state of consciousness produced in the meditative state. Deautomatization

> is an undoing of the automatizations of the apparatuses—both means and goal structures—directed toward the environment. Deautomatization is, as it were, a shakeup which can be followed by an advance or a retreat in the level of organization. . . . Some manipulation of the attention directed toward the functioning of an apparatus is necessary if it is to be deautomatized. (Gill and Brenman, 1959:178)

This phenomenon neutralizes the automatization process by reinvesting such actions, thoughts, and sensations with attention (Deikman, 1966:33; Van Nuys, 1971:127). Attention, needless to say, serves as the underpinning of all meditative techniques.[13] This becomes clear in the

Buddhist context when we read that superficial attention (*ayoniso manasikāra*) is the nourishment (*āhāra*) for the hindrances (*nīvarana*) and that, conversely, deep or thorough attention (*yoniso-manasikāra*) completely destroys them (*SN* 5. 64-65 and 102-103). Buddhaghosa (*Sv* 3.778) remarks that *yoniso-manasikāra* is "expedient (*upāya*) attention, attention focused on the Path, the type of attention that views impermanence in impermanence, disharmony in disharmony, unsubstantiality in unsubstantiality, the foul in the foul." And elsewhere (*Vm* 4.53) he writes that it is concerned with the wholesome (*kusala*), that it is penetration (*paṭivedha*) of the general (*sāmaññā*) characteristics and of individual states.

Attention leads to meditation, and in the *sati-paṭṭhāna* exercises the process that brings this about is the investigation and recollection of every appropriate action to which mindfulness is directed.[14] This particularized "witnessing" of the processes causes a deautomatization of what otherwise were automatic processes organizing stimuli. Thus, in one example cited by Deikman (1963:212), the subject viewed the stimuli in a wholly unorganized way suggesting that they were "clamoring" for his attention, having "no way of looking at the whole or any individual part." He (1963:214) also observes that this visual experience of an untrained-sensate[15] resembles the quality of visual experience in cataract patients as observed by von Senden (1960).

It is not in the untrained-sensate, however, that the higher mystical experiences so often described by both Eastern and Western mystics are found, but rather in the "trained–transcendent" (Deikman, 1966:26). Nor are unusual percepts like rapture, brilliant lights, etc., the mystic experience that the Buddhist ultimately strives after (*Vm* 20.105f.; Sobhana, 1965:10-13). In fact, such experiences as listed under the corruptions of insight, the presence of rapture (*pīti*) and ease of bliss (*sukha*) in the jhānic stages, and even the possible existence of such feelings as confidence (*saddhā*) and serenity (*passaddhi*), as well as rapture and ease experienced after reviewing the first Path and its Fruition (Sobhana, 1965: 23 and 56), must be overcome if progress along the Path is to be maintained. The whole thrust of meditative cultivation is to achieve a vision never seen before (*Vm* 22.101), to see things as they really are, and to directly perceive and realize them wholly and completely.[16] The cognition that is present after the Path would seem to indicate a "comprehensive Gestalt or intuition" (Johansson, 1969: 23), judging from Buddhaghosa's account (*Vm* 22.5f. and 92f.).

If the development of insight was designed to effect a clarifying, comprehensive intuition into the "real processes," where then is the source of such an insight? Is there a neuro-physiological basis to it? If so, where in the brain or nervous system does it reside?

The answers to these questions were inadvertantly given over 2,000 years ago in a medical observation by Hippocrates: "The human brain, as in the case of all other animals, is double". Yet, it has only been in the last quarter century that the full implication of such an observation has been realized, namely, that a double brain means a double mind or consciousness. The foreshadowers of this now-scientific fact go as far back as A. L. Wigan in 1844, who held the opinion that the "mind is essentially dual, like the organs by which it is exercised" (Bogan, 1969:113). Wigan believed that both hemispheres, however, possessed rational thought, and justified the belief by appealing to the observation of the existence of two simultaneous and opposing trains of thought (*Ibid.*). But neurological evidence accumulated to the point where it was recognized that differences in function in fact did exist between the two hemispheres of the brain. Thus, Hughlings Jackson, a neurologist of the nineteenth century, suggested tht the left hemisphere was the seat of the "faculty of expression" and the right hemisphere was the seat of the perception (*Ibid:*102). This was based upon the observation of a patient with a tumor in the right hemisphere who, as a result of this condition, did not recognize objects, persons, and places (*Ibid.*).

The next significant advance came with Myers' and Sperry's early 1950's experiment involving the severing of the corpus callosum (the nerve tissue connecting the two hemispheres), and the optic chiasm (the crossover of the optic nerves), resulting in visual input entering the left eye going to the left hemisphere, and input entering the right eye going to the right hemisphere (Gazzaniga, 1967: 119). The outcome of the experiment was that each half of the brain had visually to learn what was required of it separately when the training was undertaken with the other eye covered (*Ibid.*). This experiment, conducted on a cat, led to the severing of the corpus callosum — commissurotomy—in humans in order to control epileptic seizures. Subsequent experiments on these patients, in addition to the continuing study of individuals with either left or right hemispheric lesions, have helped to identify many areas of the brain with specific functions. But it was the subsequent tests carried out on split-brain patients that led to the full realization of Hippocrates' observation on different functions of the hemispheres.

The left hemisphere was observed to be associated with language, mathematics, and analytic knowledge; the right hemisphere with visual-spatial functions, music, arts, crafts, orientation in space, synthetic or holistic knowledge, and even perhaps dreams and those phenomena termed "mystical." The left hemisphere ratiocinates, or breaks things down into parts; the right hemisphere builds things up and so organizes and patterns them (Jaynes, 1976:118; Ornstein, 1972:53-54). Furthermore, the right hemisphere is a far quicker processor of information, and so operates in a nearly spontaneous manner (Ornstein, 1972:61). The tentative conclusion, therefore, is that Gestalt or holistic intuitive knowledge originates in the right hemisphere. If it is to be "perfected" in the Buddhist sense of the term, it must be nurtured by meditative techniques (Ornstein, 1976:34-35).

No psychologist is prepared to venture an opinion whether the ultimate experience in Buddhism, or, for that matter, other meditative or mystical religions does indeed mirror "reality," as it were, in an "objective" or empirical manner, but from the individual's own perspective it is an experience that is intensely real, especially when compared to normal states of awareness. Perhaps the words of Huxley (1954:23-24) most aptly fit this view:

> That which, in the language of religion, is called 'this world' is the universe of reduced awareness, expressed, and, as it were, petrified by language. The various 'other worlds' with which human beings erratically make contact are so many elements in the totality of the awareness belonging to mind at large.

NOTES

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1. The present essay is an abbreviated version of a paper presented to the National Endowment of the Humanities Seminar "'Other World' and 'This World' in Theravāda Buddhism" (June, 1977).

2. The articles were certainly so to the editors of *World Buddhism*, who preface each of the seven parts with the statement that they do not "agree with some of the views" of the author.

3. This is asserted in the Parable of the Raft: *Alagaddupama Sutta of MN* 1.130f.

4. A typical Theravāda Buddhist response to "Science" is made by U Chan Htoon (1961).

5. On the possible origins of this process see Ñāṇamoli, 1964: 131-132, note 13.

6. Examples are Jayasuriya (1963), Dharmasena (1963), and Piyadassi Thera 1972).

7. Tart (1977:14) defines it as "a radical alteration of the overall patterning of consciousness (compared to some reference d-SoC). . . ." A bibliography of such articles and books on meditation in particular appears in Timmons and Kamiya (1970) and Timmons and Kanellakos (1974).

8. For an outline of such practice see Goleman (1972).

9. These observations were made on subjects during the practice of transcendental meditation. See pages 127-130.

10. There are four brain waves:

1. *alpha* – 8-13 cycles per second: associated with relaxation, calm, passivity, and distortion of time and space.
2. *beta* – 14+ cycles per second: associated with the waking state.
3. *delta* – 1/2 to 6 cycles per second: associated with sleep.
4. *theta* – 4-7 cycles per second: associated with creative hallucinations and sometimes anxiety. It is often associated with a "drowsy Kafkaesque state" (Karlins and Andrews, 1972:63). See *Ibid.*, 62-63 and Walter, 1954:4f.

11. Alpha rhythms are prominent from the back of the head, i.e., the visual cortex, which is sensitive to signals sent to it from the eye (Walter, 1954:5). Thus when the eyes are shut and the thought process stops, a turning down of brain activity occurs with the alpha rhythm becoming more prominent (*Ibid.*). Hypofunctioning of the brain is already occurring with the Zen meditators despite the fact that the eyes are open.

12. Golemann (1972:32) suggests that alpha activity in the *jhāna* levels may give way to theta activity, the latter being especially active at the higher *jhāna-s* and later stages of insight. He also suggests that delta activity may be present in the higher *jhāna-s* and *nirvāna*. For an explanation of access and absorbtive concentration see *Vm* 4.31-33 and 4.79f.

13. See, for instance, *Vm* 3.26; 4.58-59; 8.4-5, 61-79. A description of attention (*manasikāra*) appears in 14.152. See Van Nuys, 1971:127-128.

14. For these exercises see *DN* II. 290f.; *MN* I. 55f.; *SN* 5.3.1-10: 141-196; *Ps* 497f.: 3.8,1-2; *Vbh* 193f.

15. He defines such an individual as one not regularly engaged in meditation or other exercises which aim at achieving a religious experience (1966:26).

16. Guenther, 1976:69f.; Johansson, 1969:21f.; Swearer, 1972:370; Nyānaponika, 1968:47.

BIBLIOGRAPHY

I. Primary Sources

Dīgha Nikāya (DN)

Rhys Davids, T.W. and J. Estlin Carpenter, editors. *The Dīgha Nikāya.* Three volumes. London: Luzac and Company, 1890-1911 (1960-1967).

Rhys Davids, T.W. and Mrs. C.A.F. Rhys Davids, translators. *Dialogues of the Buddha.* Three volumes. London: Luzac and Company, Ltd., 1899-1921 (1965-1969) (Sacred Books of the Buddhists, vols. II-IV).

Majjhima-Nikāya (MN)

Trenckner, V. and Lord Chalmers, editors. *The Majjhima-Nikāya.* Three volumes. London: Luzac and Company, Ltd., 1888-1899 (1960-1964).

Horner, I.B., translator. *The Collection of Middle Length Sayings.* Three volumes. London: Luazc and Company, Ltd., 1954-1959 (1967-1970).

Paṭisambhidā-magga (Ps)

Kashyap, Bhikkhu, J., general editor. *The Paṭisambhidā-magga.* Bihar (State): Pali Publication Board, 1960.

Saṃyutta-Nikāya (SN)

Feer, M. Leon, editor. *Saṃyutta-Nikāya.* Five volumes. London: Luzac and Company, Ltd., 1884-1898 (1960-1975).

Rhys Davids, Mrs. C.A.F., Sūriyagoda Sumangala Thera, and F.L. Woodward, translators and editors. *The Book of the Kindred Sayings (Sanyutta-Nikāya) or Grouped Suttas.* Five volumes. London: Luzac and Company, Ltd., 1917-1930 (1950-1965).

Sumaṅgala-vilāsinī (Sv)

Rhys Davids, T.W., J. Esther Carpenter, and W. Stede, editors. *The Sumaṅgala-vilāsinī, Buddhaghosa's Commentary on the Dīgha Nikāya.* Three volumes, second edition. London: Luzac and Company, Ltd., 1968-1971.

Vibhaṅga (Vbh)

Rhys Davids, Mrs. C.A.F., editor, *The Vibhaṅga.* London: H. Frowde, Ltd., 1904.

Visuddhi-magga (Vm)

Rhys, Davids, Mrs. C.A.F., editor, *Visuddhi-magga of Buddhaghosa.* Two volumes. London: Humphrey Milford, 1920-1921.

Warren, Henry Clarke and Dhārmananda Kosambi, editors. *Visuddhimagga of Buddhaghosācariya.* Cambridge, Mass.: Harvard University Press, 1950.

Ñyāṇamoli, Bhikkhu, translator (1964). See below.

II. Secondary Sources

Anand, B.K., G.S. Chhina, and B. Balder Singh (1961). "Some Aspects of Electroencephalographic Studies in Yogis". *Electroencephalography and Clinical Neurophysiology,* Vol. 13 (1961): 452-456. Reprinted in Tart (1972): 515-518.

Bogen, Joseph E. (1969). "The Other Side of the Brain: An Appositional Mind". *Bulletin of the Los Angeles Neurological Societies,* Vol. 34, no. 3 (July 1969): 135-162, reprinted in Ornstein (1973): 101-125.

Burns, Douglas M. (1966). *Buddhist Meditation and Depth Psychology.* Kandy: Buddhist Publication Society (*Wheel,* no. 88-89).

Chan Htoon, U. (1961). *Buddhism and the Age of Science.* Kandy: Buddhist Publication Society (*Wheel,* no. 36-37).

Deikman, Arthur J. (1963). "Experimental Meditation". *Journal of Nervous and Mental Disease,* Vol. 136: 329-373. Reprinted in Tart (1972): 203-223.

——— (1966). "Deautomatization and the Mystic Experience". *Psychiatry,* Vol. 29 (1966): 324-338. Reprinted in Tart (1972): 25-46.

Dharmasena, C.B. (1963). *Aids to the Abhidharma Philosophy.* Kandy: Buddhist Publication Society (*Wheel,* no. 63-64).

Gazzaniga, Michael S. (1967). "The Split Brain in Man". *Scientific American,* Vol. 217 (no. 2) (Aug. 1967): 24-29. Reprinted in *Readings from Scientific American* (1972).

Gill, M.M. and M. Brenman (1959). *Hypnosis and related states: psychoanalytic studies in regression*. New York: International Universities Press.

Goleman, Daniel (1972). "The Buddha on Meditation and States of Consciousness. Part I: The Teachings". *Journal of Transpersonal Psychology*, 1972 (no. 1): 1-44.

Guenther, Herbert V. (1976). *Philosophy and Psychology in the Abhidharma*. Berkeley: Shambhala.

Hartmann, H. (1958). *Ego Psychology and the Problem of Adaptation*. New York. International Universities Press.

Huxley, Aldous (1954). *The Doors of Perception*. New York: Harper and Row Publishers, Inc.

Ittelson, W.H. and F.P. Kilpatrick (1951). "Experiments in Perception". *Scientific American*, Vol. 185 (Aug. 1951): 50-55. Reprinted in Ornstein, 1973: 171-184.

Jayasuriya, W.F. (1963). *The Psychology and Philosophy of Buddhism*. Colombo: Y.M.B.A. Press.

Jaynes, Julian (1976). *The Origin of Consciousness in the Breakdown of the Bicameral Mind*. Boston: Houghton Mifflin Co.

Johansson, Rune E.A. (1969). *The Psychology of Nirvana*. London: George Allen and Unwin, Ltd.

Karlins, Marvin and Lewis M. Andrews (1972). *Biofeedback*. New York: Warner Paperback Library.

Kasamatsu, Akira and Tomio Hirai (1966). "An Electroencephalographic Study on Zen Meditation (Zazan)". *Folia Psychiatria et Neurologia Japonica*, Vol. 20 (1966): 315-336. Reprinted in Tart (1972): 497-514.

Kelly, George (1955). *Psychology of Personal Constructs*. Two volumes. New York: W.W. Norton and Company, Inc.

Ñāṇamoli (Ñyāṇamoli), Bhikkhu, translator (1964). *The Path of Purification (Visuddhimagga)*. Colombo: A. Semage.

Nyanaponika Thera (1968). *The Power of Minfulness*. Kandy: Buddhist Publication Society (*Wheel*, no. 121-122).

Ornstein, Robert E. and Claudio Naranjo (1971). *On the Psychology of Meditation*. Harmondsworth, Middlesex, England: Penguin Books.

———, ——— (1972). *The Psychology of Consciousness*. San Francisco: W.H. Freemand and Company.

———, ———, editor (1973). *The Nature of Human Consciousness*. San Francisco: W. H. Freeman and Company.

———, ——— (1976) *The Mind Field*. New York: Grossman Publishers.

Piyadassi Thera (1964). *The Buddha's Ancient Path*. London: Rider and Co.

Polanyi, Michael (1961). *The Study of Man*. Chicago: University of Chicago Press. Reprinted in Ornstein (1973).

Readings from Scientific American: Altered States of Awareness (1972). San Francisco: W.H. Freeman and Company.

Robinson, Richard (1970-1972). "Implications of Human Sciences for Buddhism", *World Buddhism*, Vol. XX: 59-60, 90-92, 117-119, 146-147, 179-181, 205-207, and 224, 233-236.

Sobhana, V. (1965). *The Progress of Insight through the Stages of Purification*. Text with translation by Nyanaponika Thera. Ceylon: The Forest Hermitage.

Swearer, Donald K. (1972). "Two types of saving knowledge in Pāli Suttas". *Philosophy East and West*, Vol. 22 (no. 4): 355-371.

Tart, Charles T. (1971). "Scientific Foundations for the Study of Altered States of Consciousness". *Journal of Transpersonal Psychology*, 1971 (no. 2): 93-124.

———, editor (1972). *Altered States of Consciousness*. Garden City, New York: Doubleday Anchor Books.

———, editor (1977). *Transpersonal Psychologies*. New York: Harper Colophon Books.

Timmons, Beverly and Joe Kamiya (1970). "The Psychology and Physiology of Meditation and Related Phenomena: A Bibliography". *Journal of Transpersonal Psychology*, 1970 (no. 1): 41-59.

——— and Demetri Kanellakos (1974). "The Psychology and Physiology of Meditation and Related Phenomena". Bibliography II. *Journal of Transpersonal Psychology*, 1974 (no. 1): 32-38.

Van Nuys, David (1971). "A Novel Technique for Studying Attention during Meditation". *Journal of Transpersonal Psychology*, 1971 (no. 2): 125-133.

von Senden, M. (1960). *Space and Sight*. Glencoe, Illinois: Free Press.

Wallace, Robert Keith and Herbert Benson (1972). "The Physiology of Meditation". *Scientific American*, Vol. 226 (no. 2), Feb. 1972: 84-90. (*Readings from Scientific American* [1972]: 125-131).

Walter, W. Grey (1954). "The Electrical Activity of the Brain". *Scientific American*, Vol. 190 (no. 6), June 1954: 54-63. (*Readings from Scientific American* [1972]: 4-13).