Reviews

Science and Religion, A Critical Survey. By Holmes Rolston, III. New York: Random House, 1987. 357 pages. \$11.50 (paper).

This book is notable for its breadth and depth. It surveys a wide range of material and conducts a provocative dialogue between the perspectives of the natural and social sciences and a theoretical view of religion. It reminds one of Ian Barbour's magisterial *Issues in Science and Religion* (New York: Harper & Row, 1971).

The comparison with Barbour's book is useful in clarifying the pattern and purpose of Rolston's book. *Issues in Science and Religion* was intended to be an introductory text for courses in science and religion. It defined basic concepts, surveyed the western historical patterns of interaction between scientific and theological perspectives, delineated methodological distinctions between the natural, social, and humanistic sciences (including theology), and concluded with explorations of issues such as indeterminacy, the emergence of life, evolution and creation, and the relationship of God and nature.

Rolston continues, updates, and extends the discussion of issues posed in Barbour's final section, but does not duplicate the historical survey. The discussion of methodology, begun in a substantial first chapter, is integrated into the analysis of each of the sciences surveyed. The book could be used profitably as an introductory text in a course in science and religion. Yet it is quite sophisticated and assumes some familiarity with the field of discourse. It would be very well suited to seminars and advanced courses in science and religion. Rolston indicates that his book is "a broadly conceived critical survey of the dialogue between science and religion. We surveyed the sciences to inquire what room they leave for religion" (p. v). It is clearly written and Rolston's use of illustrative examples and diagrams is very helpful. The long chapter on the biological sciences summarizes and focuses the crucial issues in that field in a particularly clear and suggestive way and is worth the price of the book.

There are seven chapters, beginning with a careful discussion of method in scientific and religious inquiry. In the first chapter ("Methods in Scientific and Religious Inquiry"), Rolston introduces his version of developmental history of theory based on a hypothetico-deductive model. The premises of Rolston's approach become increasingly clear in this first chapter, specifically that science and religion are differing disciplines, and that the key element of differentiation is that sciences seek after causes and religion seeks after meaning. Thus, he is committed to an essentially dualistic approach—a dichotomy of science and religion which he attempts to develop without losing the subtlety and nuances of interaction. He clearly understands that the concepts of meaning and cause are not so easily separated or distinguished as his premise might suggest.

The next five chapters survey disciplines which have modeled themselves as sciences, seeking to find causal explanations, first for matter in the most abstract and general sense and subsequently for life, mind, culture, and history. Chapters two ("Matter: Religion and the Physical Sciences") and three

("Life: Religion and the Biological Sciences") focus on natural sciences, physics and biology broadly understood, and attempt to show the manner in which the logic of those sciences lead to questions of meaning and to the possibility of a religious perspective. Chapters four ("Mind: Religion and the Psychological Sciences") and five ("Culture: Religion and the Social Sciences") deal with human sciences, psychology and sociology primarily, and are more confrontational. He criticizes overly simplistic scientific models and insists that in the realm of mind and culture causal explanation is not always possible and rarely adequate. This again suggests the need for a "dimension of spirit" and a meaning-based form of inquiry. Chapter six ("Nature and History") focuses on Rolston's perception that nature is understood meaningfully in terms of a narrative of Divine Spirit; that is, as a form of history. In this chapter he develops a Christological analysis of nature and history. Chapter seven ("Nature, History, and God") continues this discussion into an assessment of religious or theological perspectives on God appropriate to such an understanding of nature and the role of scientific inquiry.

The pattern of development from chapter to chapter seems to be tied to a "racheting" model, which is developed in more detail in chapter six in a diagram suggesting the ontological structure and process as expressed in historical time in which nature moves through energetic forms into formational pattern through informational structures into structures of mind and spirit (p. 242). Each dimension of physical, natural organization encompasses the possibility of the superseding stage and each superseding stage appropriates the structures as given but develops them in ever more complex patterns, leading from particle to spirit. This somewhat Teilhardian presupposition leads to an interesting perspective on the relationship of the human sciences to the natural sciences.

In the chapters on physics and biology, the explication of the scientific, theoretical development is powerful and clear. It is also essentially sympathetic. Rolston finds in the self-critical, theoretical formulations of these sciences and in the sense of the limits of causal analysis, openings for a distinctively religious perspective on meaning. When he turns to psychology and sociology, however, he finds little openness and self-criticism, and his form of analysis shifts to the presentation and indictment of competing theoretical models as ultimately reductionistic. In the chapter on mind, he criticizes Freudian and behavioral psychology (Skinnerian and cognitive) and turns to humanistic psychology for an understanding of the human in terms of historical meaning. The discussion of culture is also a survey of reductionist positions. There are extensive critical analyses of Comtean and Durkheimian sociology and a general discussion of interpretive sociology without much treatment of its basic perspective.

These two chapters seemed the weakest in an otherwise brilliant book. Acknowledging the lack of theoretical coherence in these sciences, Rolston accuses competing theoretical structures of reductionism, which is plausible. However, the thrust is to suggest that, in the absence of an adequate theory, there is room for religion! That is too much like a "God of the gaps" argument.

The chapter on nature and history includes three sections on views of history—hard naturalism, soft naturalism, and Eastern religious perspectives. While these sections are interesting and well argued, it is not clear how they contribute to the thrust of the chapter which is the argument that sentient creatures having developed culture move into a level of historical cognition that can be understood only in terms of drama and narrative. At this point, Rolston makes his methodological connection, showing that the hypothetico-

deductive method which may characterize science passes over necessarily into an historico-critical method in the perspective of religion. He argues that there is a directionality in the development of nature which is only understood in the context of historical consciousness. This leads him to a very thoughtful discussion of the meaning of suffering in which he argues that the whole evolutionary development of the physical world could be understood as an evolution of suffering. This ties back to a section of the second chapter entitled "The Life Struggle." In that section (pp. 133-46), Rolston developed a careful analysis of the role of suffering in the extension of life and of the proper function of struggle and suffering in biological adaptation. In the analysis of suffering at the level of history (pp. 286-93), Rolston suggests a cruciform naturalism as an alternative to the hard and soft naturalisms of earlier philosophical analysis. Because he disagrees with the usual forms of naturalism which regard subjectivity as epiphenomenal, he moves to a position that takes the subjectivity of the experience of suffering and the finding of meaning in suffering as "the parable of nature and history" (p. 289).

In the final chapter, Rolston opts for a "transscientific" theism (defined in neo-Barthian terms) over what he calls a scientific-existentialist theism or a process theism. His preference for a transscientific theism meshes with his premise that science and religion must be understood in terms of complementarity—an exclusiveness of perspective—rather than in terms of a spectrum of relatedness. Process theism suggests that relatedness, and, while Rolston is open to its strengths, he finally repudiates it because he argues that "you can't get there from here." That is, his premise is that the only way to develop a religious perspective is to acknowledge its unique and separate frame of reference opposed to a scientific analysis. This, he suggests, process theism does not do.

This book is filled with admirably argued and powerfully presented treatments of crucial issues in the discussion of religion and science. The great strength of the book is in the careful interweaving of religious themes with scientific motifs. This interweaving cuts across the stated conviction of the author that science and religion are distinctive and that causes and meanings while related to each other cannot finally be correlated and must be held distinct. The very carefully nuanced Teilhardian movement from abstraction to concreteness, from externality to internality, suggests a connectedness of causal and meaning analysis. At places, Rolston indicates those connections are indeed close. However, in the end, he reverts to a dualistic perspective. As such this book is the most substantial argument for a position on the relationship of science and religion that is eminently worth arguing. The presentation is finely nuanced and carefully developed.

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Two Faces of Time. By LAWRENCE W. FAGG. London: Theosophical Publishing House, 1985. 194 pages. \$7.75 (paper).

What about this alleged warfare between religion and science? Historian of religious thought Claude Welch claims that no such war ever took place.

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Whatever battles were fought were at best police actions within the single march of the modern Western mind. Nevertheless, the religious troops have for some time been marching to a different cadence than the scientific ranks. Now we are seeing numerous attempts to coordinate the cadence, to cultivate a common esprit de corps.

Lawrence Fagg, research professor in nuclear physics at the Catholic University of America, feels that "religion needs science to revitalize its theological structure and to refine its moral and spiritual values" while, on the other hand, "science may need religion for more enlightened and altruistic motivation, for deeper, more powerful intuitive insights into nature . . ." (p. 4). As a test case, Professor Fagg seeks to revitalize religion and deepen science through a comparative analysis of the phenomenon of time.

We should thank Fagg for providing us with a brief and readable book which assembles in one place the various items we need to foster a discussion on the significance of time: relativity, quantum theory, entropy, and Big Bang cosmology plus summaries of the understanding of time in Hinduism, Buddhism, Taoism, Judaism, and Christianity. Once he has this disparate collection of perspectives assembled, he attempts to sort them out and identify correspondences. In fact, we might describe his method as one of identifying correspondences with the intention of developing a "unified concept of time" (p. 6).

Fagg looks for correspondences between scientific or "objective" concepts of time and religious or "subjective" concepts of time in such categories as the beginning of time, the end of time, and the duration of time. When it comes to the question of the beginning of time, for example, he compares the Big Bang Theory favorably with the Genesis account of creation. He notes that in both cases we find reported that the universe begins at a specific moment, that there is an absolute beginning. In addition, the advent of light and the idea of creation in evolutionary stages play important roles in both views. Fagg also ties to this a comparison of Augustine, an interpreter of Genesis, with physicist John Wheeler. Both Augustine and Wheeler affirm that prior to the absolute beginning we must speak of a period that is prior to time itself, that is, a time of timelessness. Fagg is appreciative of the ancient authors of Genesis and other primitive myths, because even though they "may not have been able to fill in all the complex and refined details, they may have been able through spiritual insight to sense reality and time's place in it in broad outline" (p. 138). What Fagg seems to assume is that modern science with its empirical methods provides the measure whereby we can show that ancient religion with its intuitive insights was not too far off the mark. Or, to put it another way, if we can show that there is a correspondence between modern research and ancient insight, then we will move closer to establishing a unified concept of time.

Like Fagg, I find the rough parallels between Big Bang Theory and the concept of absolute creation in Genesis exciting and worth pondering. Nevertheless, I suspect that Fagg's correspondence method is weak on two counts. First, Fagg selects out of the ancient account only those sequences of events which correspond to the modern view and ignores those which do not. Let us continue with the Genesis example. Whereas Genesis describes the creation of earth with all its vegetation on the third day, prior to that of the sun and stars on the fourth day, astrophysicists hold that our sun and solar system were formed together about five billion years ago, meaning that the sky was filled with stars and galaxies for perhaps ten billion years previous to the creation of the earth. Whereas Genesis pictures God on the sixth day resting, the creative work now completed, astrophysicists contend that new stars are being formed now and will continue to be formed for some time yet, that is,

creation is continuing. What this means is that the day-by-day creation account of the Bible is not readily correlated with our scientific theory of cosmic evolution, and that at best there is an accidental relationship between the stage-by-stage development in the two accounts which Fagg thinks is so important.

Second, Fagg seems to assume that the knowledge gained from empirical research and from religious intuition has to do with exactly the same reality. However, we can make a distinction regarding the domains of knowledge. Natural scientists are usually quite cognizant of the limits to which their knowledge applies, that is, it applies to this world. The religious intuition, in contrast, poses questions about what is beyond this world, about the relationship between this world and that which transcends it. The God pointed to in Genesis intersects with this world in the act of creation, but the reality of this God comes from beyond it. Consequently, we can say that the domains of scientific and religious knowing overlap, to be sure, but they can be distinguished.

This leads to an important observation regarding the absolute beginning of the universe at t=0. Both Augustine and the astrophysicist can say that before the onset of the Big Bang we cannot speak of there being any time, but they would do so for different reasons. For Augustine, such a statement stresses the finitude of the cosmos in contrast to the infinite reality of the divine. Temporality is a delimiter for the theologian. It contrasts our temporal realm from the divine eternity. For the astrophysicist, however, such a statement locates the limit of the theory. It locates the boundary beyond which the empirical evidence will no longer allow us to speculate and still remain scientific. For Augustine the concern is ontological, whereas for the astrophysicist it is methodological. The two may very well be complementary. We may need both if we are to apprehend reality correctly. But the correspondences between Big Bang Theory and Genesis only serve to open up the dialogue; in themselves they are insufficient for moving us into a unified concept of time.

In conclusion, this book offers the educated lay person—whether a scientist who is lay in matters of religion or a theologian who is lay in matters of science—readable synopses of the material relevant to pursuing discussion regarding the meeting ground between science and religion. It does not as yet provide us with the new paradigm which will enable us to place both domains of knowledge into a single more inclusive domain, a revolutionary paradigm for which we long but which to be too long in coming. If such a transition to a new and revolutionary insight is to come in this or the next generation, it will have to account for the kind of material we find in this helpful book.

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Science and Religious Thought: A Darwinian Case Study. By WALTER J. WILKINS. Ann Arbor, Mich.: UMI Research Press, 1987. 209 pages. \$39.95.

This book merits a mixed review. On the positive side, it presents a veritable encyclopedia of religious thinkers' responses to evolution grouped according

[Zygon, vol. 23, no. 2 (June 1988).] © 1988 by the Joint Publication Board of Zygon. ISSN 0591-2385 to similarities and historical connections. The author has organized his material using five models for relations between religion and science derived from H. R. Niebuhr's five-fold typology in *Christ and Culture* (New York: Harper & Row, 1951)—a strategy I could scarcely fail to commend, having employed it once myself ("Theology and Transformer of Science? A Niebuhrian Typology for the Relation of Theology to Science," *Center for Theology and the Natural Sciences Bulletin* 5 [Autumn] 1985).

On the negative side, Wilkins set out to provide an understanding of Charles Darwin's work as a revolution in scientific method and to present religious responses *primarily* as reactions to that new method. Unfortunately, the author's grasp of issues in scientific methodology was not adequate to the task and

sections of the book are therefore confused and misleading.

Wilkins devotes a chapter to each of four groups of religious thinkers. The first of his models is "religion against Darwinism," and here he places those who have rejected Darwinian evolution on religious grounds: Charles Hodge, a nineteenth-century Presbyterian; Orestes Brownson, a nineteenth-century Catholic; current creationists Henry Morris and Duane Gish; a few surprises such as Stanley Jaki and Huston Smith; and others. Wilkins points out that many of the opponents of Darwinian science share the presuppositions of Scottish common sense realism and claims that it is this epistemological commitment that motivates their opposition. "In this model, Darwinism is as much bad science as it is a threat to religious faith, and the epistemological... revolution of which Darwin was the culmination has to be resisted in order for science and religion to work together in praise of God" (p. 162).

The opposite extreme Wilkins classifies as "the religion of Darwinism," whose proponents embrace Darwin's revolution out of the conviction that science provides the only valid source of truth. "The 'of' model rejects traditional religious concepts of God and replaces them with its own myth of human meaning rooted in an evolutionary world view..." (p. 162). In this chapter Wilkins recounts the history of the Free Religion Movement, of which Octavius Brooks Frothingham and Francis Ellingwood Abbot were prominent leaders, and presents the Instition on Religion in an Age of Science as its twentieth-

century counterpart.

Wilkins's third model is "religion and Darwinisticism in concert." *Darwinisticism* refers to metaphysical and ethical positions taken to follow from Darwinian science. The concert model strives to retain traditional religious concepts and synthesize them with a (corrected) view of evolution. John Fiske, James McCosh, and Pierre Teilhard de Chardin are earlier representatives of this approach; John Cobb, Charles Birch, and Arthur Peacocke are some of Wilkins's contemporary examples.

As representatives of his fourth model, "religion above Darwinism," Wilkins includes those thinkers who welcome Darwin's liberation of science from religious presuppositions, "since religion must be based upon faith, not scientific world views" (p. 127). Faith and science are distinct but complementary enterprises. Here he includes Asa Gray, Karl Barth, Emil Brunner, Reinhold Niebuhr, and the Vatican's current position.

In his final chapter Wilkins raises the question whether a fifth model, based on Niebuhr's transformationist (conversionist) type, might be possible and suggests that Peacocke, James Gustafson, and Ian Barbour are moving in this direction.

I said above that Wilkins's models are *derived* from Niebuhr's typology in *Christ and Culture*; however this must be taken loosely since the parallels fail at

some points. Niebuhr's first two types, Christ against culture and Christ of culture, find close parallels in Wilkins's models. However, Wilkins's descriptions of both his "concert" and "above" models echo themes from Niebuhr's synthesist (Christ above culture) model, while some of the entries in Wilkins's "above" chapter fit Niebuhr's dualist or paradox type. For example, Reinhold Niebuhr argues for a dialectical relation between the various realms of knowledge based on the paradox of freedom and natural necessity in human life (pp. 148-49).

This work is marred by errors, some trivial, others quite serious. As an example of the first, Wilkins claims that Peacocke rejects both methodological and theoretical reductionism (p. 123) whereas in fact in his *Intimations of Reality* (Notre Dame: Univ. of Notre Dame Press, 1984, p. 35) Peacocke distinguishes the two in order to reject the latter without calling the former into question.

A nontrivial error is a confusion of induction and deduction. Wilkins claims that "an inductive conclusion follows necessarily while a deductive conclusion is probably true" (p. 25). This failure to differentiate between induction, deduction, and hypothetico-deductive reasoning leads to indecipherable confusion in his discussion of Darwin's supposed methodological revolution (chap. 2) and in his account of common sense realist objections to Darwin (chap. 3). Consequently, Wilkins has not made good on his claim to explain religious reactions to Darwin on the basis of conflicting views of epistemology and scientific method.

However, to end on a more positive note, there is a great deal of interest in this book regarding the history of Christian and other responses to Darwin. Wilkins's distinction between Darwinian biology and Darwinistic metaphysics and ethics is an important one. Furthermore, he makes it clear that Darwinian thought challenged not only a particular Christian doctrine (creation) but also an entire world view: Biology broke definitively with a world of teleology and supernatural causation. The replacement of creation by natural selection was more than the replacement of one explanation by another; it changed the very nature of explanation, marking the beginning of an era in biology when supernatural explanations were to be ruled out in principle as unscientific.

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Jung's Treatment of Christianity. The Psychotherapy of a Religious Tradition. By MURRAY STEIN. Wilmette, Ill.: Chiron Publications, 1985. 208 pages. \$24.95.

Murray Stein's innovative but persuasive thesis is that C. G. Jung's writings about and attitude toward Christianity can be best understood as that of a psychotherapist working with a client. Stein is himself a psychotherapist and well prepared for this analysis of Jung's writings. He is a diplomate graduate of the C. G. Jung Institute in Zurich and holds a doctoral degree from the University of Chicago. He is president of the C. G. Jung Institute of Chicago, editor of *Jungian Analysis* (Open Court, 1982), author of *In Midlife* (Spring

Publications, 1983), and coeditor of the new Jungian journal, Chiron: A Review

of Jungian Analysis.

In chapter 1 ("Jung's Interpreters") Stein identifies four ways in which Jung's relationship to Christianity has been regarded by writers on that subject. The first category ("Jung the Empirical Scientist") is one which Jung frequently claimed for himself. Stein reviews briefly a number of authors who accepted this understanding but devotes most of this section to a review of Jung's relationship with the Dominican priest and theologian, Victor White. (Since Stein's book was published, a Yale doctoral dissertation by Ann Lammers has considered this topic.) The second category ("Jung as Hermeneutical Revitalist") suggests that a number of writers have viewed Jung as interpreting Christianity symbolically, thereby attempting to bring to life what had become dead for many people. The third section ("Jung the Doctor of Souls") suggests that some authors have regarded Jung as primarily concerned with the psychic health of individuals rather than with the religious institution as such. In this view Jung's suggestions for changes in Christianity were not so much designed for helping the institution as making Christianity viable for individuals. The fourth approach Stein calls "Jung the Modern Man." These interpreters view Jung as attempting to resolve his own emotional attachment to Christianity and his moral commitment to modernity. Stein finds each of the approaches previously taken inadequate and concludes the chapter by suggesting his own proposal: to view Jung as therapist for the religious tradition.

All of Stein's examples of the four approaches taken by Jung's interpreters are provocative, although many could be regarded as belonging to more than one of his categories. The sharp division into four previous approaches is a rather forced stratagem for introducing his thesis. Stein's discussion actually covers the same ground as previous interpreters, but with the added perspec-

tive of Jung as therapist to Christianity.

Chapter 2 ("Jung's Method of Psychotherapeutic Treatment") begins by describing the parallels between Jung's thought on Christianity and the practice of psychotherapy. In the first subdivision ("The Beginnings of Jung's Therapeutic Method") Stein describes how Jung developed his approach to psychotherapy. No one has given as such a clear picture of this-including Jung. Jung's writings on Christianity occur mainly during the last twenty-five years of his long life and so it is the developed techniques of his therapy which are applied to his "patient." Stein identifies three focal points in Jung's method of therapy as it was finally developed. Anamnesis and historical reconstruction are the first step, then the use of psychological interpretation (two types: reductive and prospective), and finally, the therapeutic relationship (the transference/countertransference process). These provide the outline for Stein's discussion of Jung's method of therapy and ultimately for his analysis of Jung's writings on Christianity. This chapter is unique in the Jungian literature and constitutes a valuable contribution to an understanding of Jungian therapy even if one is not interested in Jung's treatment of Christianity.

In chapter 3 ("On the Relationship between this Doctor and Patient") Stein helpfully brings together biographical material from numerous sources. Stein focuses on Jung's relationship to his father (a seemingly ineffective pastor from the son's perspective) and also on his relation to Sigmund Freud who functioned as a father figure in the earlier years of Jung's career. Stein rightly points out that throughout his later writings Jung carefully affirmed the relative truth and usefulness of Freud's theory and treatment methods while also stressing their partialness. This was also the approach Jung took late in life

to his father's religion. Stein describes Jung's attitude this way: "Christianity was not false and a mere relic of the superstitious past, as Freud had seen it. It

was not untrue, but it was partial" (p. 97).

In chapter 4 ("Doctor Jung's Treatment of Christianity") Stein reviews in chronological order Jung's various essays and lectures in which aspects of Christianity were considered. Particular attention is given to Jung's long essay on the Trinity, which Stein suggests contains not only a diagnosis of the patient's chief problem but suggestions for the necessary transformation for healing to occur. The major subdivisions in the chapter indicate the coverage: "Jung's Therapeutic Interpretation of Christianity's God Symbol"; "An Archetypal Interpretation of a Christian Ritual: The Mass"; "The Interpretation of Christian History and Its Repressions"; "Aion: The Reconstruction of Christianity's Developmental History and Critical Interpretation of its Central Symbols"; "Answer to Job: Jung's Interpretation of Christianity Through the Countertransference"; "On Synchronicity: Jung's Interpretation of Modern Science"; "The Therapist's Vision of Christianity's Future Wholeness"; and "Concluding Postscript." Each of Jung's various essays and lectures are shown to be an aspect of Jung's method of doing therapy as outlined in chapter 2.

Chapter 5 ("On the Patient's Prospects") discusses changes in the institution since Jung's death and how he might have evaluated these. In the last major subdivision of the chapter ("Measuring up to the New Age") Stein states that he thinks Jung would ahve regarded the patient as improved, but whether the improvement is enough remains the question. Three major stumbling blocks remain, Stein suggests, between the Christian tradition and Jung's vision of a future transformed Christian tradition. First, Jung's prescription called for a doctrine of God to be expressed in a symbol that represented God as a quaternity and a unio oppositorum. The two pairs of opposites cited by Jung as missing in Christianity are the masculine-feminine and good-evil polarities. Such a transformation, Stein writes, would amount to a new religion with a relation to traditional Christianity like that of Christianity to Judaism. Jung himself may have recognized that the kind of transformed Christianity which he thought necessary amounted to a third stage in the development of the religious

tradition of the West.

Another major stumbling block Stein identifies is that of authority. Tradition, Scripture, or the community of believers have from earliest times been the sources of authority—not the individual's experience of the divine. Yet the latter is what Jung's prescription calls for. Stein points out that such a transformation would have revolutionary implications for theological method, for ethics, for church polity, for personal piety, and for religious practice.

The third stumbling block suggested is that of "emblematic lives." Jung's vision of individual wholeness is a departure from the ideals of spiritual perfection that have been a part of the Christian tradition. For some, however, Jung has become just that model of wholeness which he prescribed as the goal of life. Stein concludes that it is an open question whether Jung's therapeutic efforts will assist Christianity to die and be reborn.

This book provides a careful review and a comprehensive interpretation of Jung's writings on Christianity. It is well organized and the logic of the argument is easy to follow. Stein tells you what he plans to do in the book, then he does it, and finally he tells you what he has done. The repetition, however, is more helpful than burdensome. The book is relatively free of technical lan-

guage and that which is used is carefully explained. At the same time it is a scholarly piece of work, a fine book.

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Polanyian Meditations: In Search of a Post-Critical Logic. By WILLIAM H. POTEAT. Durham: Duke University Press, 1985. \$39.50.

Polanyian Meditations is a brilliant piece of work, and of a quality that puts it alongside the most seminal works of this century. Its distinctive character is that it is itself a performance, a *tour de force*, an embodiment of the central argument.

These are my words published on the jacket of this book. In this *Zygon* review I will attempt to explain why I see this work as so outstanding and why it is important to persons concerned with the creative relation of science and religion.

I begin from my standpoint rooted in the thought of Michael Polanyi which showed not only the mistaken understanding of science as impersonal objectivity but also proposed a positive reform in an alternative epistemology, which he called "personal knowledge" and "tacit knowing." Polanyi's view has had some influence, and through books, articles, conferences, and an association of Polanyi savants I have attempted to teach and to explore Polanyi's challenging proposal of a post-critical theory of knowledge. I have found, as Polanyi himself found, that the acceptance of his ideas is wanting. The powers of the objectivist ideal and the critical program are still dominant and even those who read and sympathize with Polanyi seem to continue in the critical tradition. Why? Poteat's book provides both an answer and a way out.

First, Poteat presents in *Polanyian Meditations* the cumulative skills and insights of a lifelong struggle with the heart of the modern critical tradition, the Cartesian mind-body separation and ideal of ratiocinate lucidity. Poteat knows this problem well. "... Our history begins with Enlightenment, with Renaissance, with Reform. For good and for ill, we are creatures of criticism, revolution, self-inflicted amnesia. Not only have we turned our backs upon the past, tradition, inherited ways, the harmonious balance between man and nature. We have been tempted, as we have dedivinized nature, following our biblical inheritance, to divinize ourselves; and there has thus ensued a ripening flirtation with godhood, with infinity, restlessness, tumult, and madness. Descartes ... consolidated the emerging hopes of his predecessors and drafted a program for our sensibility..." (p. 4). Cartesianism

is first and fundamentally not a set of articulated philosophical doctrines, but rather a picture, lodged with growing authority in the imagination of the West from the end of the Middle Ages on. . . . This picture is comprised of a coherent system of mutually implicative images, metaphors, and analogies that represent man's relation to nature, to his own body, to the worlds of material objects, to time and history, to his acts of reflection, to his decisions, to his intellect, even to his own ego, and these relations are analogous to the relation that God is conceived to have to the world that he has made out of nothing. Man

is here depicted, in other words, as essentially disembrangled from, because transcendent over, and thus autonomous in relation to all of these (pp. 252-53).

This program of the human mind to master itself and nature by a disembodied knowing is the problem of Poteat's work.

Second, Poteat brings together the insights of giants who have penetrated the fortress of the critical tradition and builds an outpost, a new frontier where exocritics, post-critical persons, can live and create. By the sustained labor of a lifetime of breaking down the Cartesian stronghold, Poteat has ventured into the territory of post-critical being. What was intimated in the work of Blaise Pascal, Soren Kierkegaard, Ludwig Wittgenstein, Hanah Arendt, Maurice Merleau-Ponty, and Polanyi is used to open up the post-critical territory. Hence the style and method of the book are crucial to its message. Poteat is not identifying, diagnosing, counterattacking, or discussing in the usual adversarial ways of philosophers. Instead, he takes the ground the post-critical prophets have established and goes on to live out before the reader the implications of what they saw. In this process Polanyi is a focal point of organization, but his thought coupled with Poteat's appropriation of the masters mentioned above is not the subject of the book. The subject is what it is like to think and be in a world freed from the desications of discarnate thought. Hence, Poteat has given what may be the first philosophical report from the land beyond the "old modern age" (p. ix).

Third, both the focus and the report of Poteat's Polanyian Meditations discloses the way out of the continuation of the critical tradition's dominance. In the way Poteat presents his work, the reader is led into an involvement that is itself a step-by-step journey from the gate of recognizing the critical problem to the roads of recovering the mindbody that has been mind and body. Here is the reason why this book is aptly titled "Meditations." At a formal level the title is explained in its similarity to Edmund Husserl's Cartesian Meditations. Like Husserl probing at the centrality of consciousness in Descartes' thought, Poteat is examining Polanyi's novel way of understanding assumptions, valuations, premises, and beliefs in science. At a deeper level the book is evoking reflection, involution, and evolution. The reader, I do not think, can read this book in the usual distance and detachment taught by our common tradition. Poteat has taken the indirection, the Socratic midwifery of Kierkegaard, along with the alertness and subtlety of Wittgenstein to the myriad roles of language, plus the bodily being in the world of Merleau-Ponty, and the tacit knowing of Polanyi to realize the fullness of the logic that is "the hanging together of things" and "the form of making sense of things" (p. 9). With Poteat, we discover that this logic comes from the fundamental unity of mind and body. "Muscles make assumptions" (p. 17). As you read, you become engaged in the investigation.

The feature that is so different about this book is its authentic liberation from the captivity of the critical tradition that still controls the terms, the definitions, the standards, and the moves of the discussion. Poteat does not attempt to discuss and to convince on these grounds. He takes his stand in the "mindbodily" (p. 7). He knows that other anti-Cartesians have undermined their own case as they have argued in the language and assumptions of their opponents. He sees that the transformations needed for post-critical being are so pervasive that you cannot overthrow them by a frontal assault alone. Polanyi and others have made the direct argument, but they have been barely heard and then put aside. To leave behind the Cartesian bifurcations that produce a discarnate knower without a temporal living body, Poteat shows a way of phenomenologi-

cal self-reflection combined with etymological ancestries that lead us to our own roots. He speaks in the first person and invites the reader into the process. We witness Poteat's own bending back and breaking out and are led into reflecting on our own experience. The method is difficult, painful, but finally healing.

Having said so much about the main aim and the effects of this book, what in more direct terms is its organization and content? It has no chapter titles nor obvious programatic organization. Its organization is organic in that it unfolds in Poteat's unique story and quest. The reader is situated with the Cartesian problem, Poteat's intellectual alliances, and the stories of how this book began—a seminar's excursus, a sabbatical in Greece, but even that cannot be linear since earlier Poteat had begun in his doctoral dissertation on Pascal and Descartes and later in Polanyi to pursue the nature of rationality and logic in an intellectual climate in which Cartesianism had left us "culturally insane" (p. 6). The book has seventeen sections, and they are meant to be read as meditations, occasions for deep wondering and thinking mindbodily. While there are no headings, there are long recapitulations throughout that help the reader find a line of progress. Habitués of this critical world may give up too soon finding the reading dense and oblique. It is dense, but it is not so much obscure as it is rare. We are not accustomed to reading and to thinking in vital post-critical ways. If readers endure beyond page fifty where the first "divertissement" ends, I believe they will have at least discovered what makes this work so important and interesting. Besides the recapitulations within the various sections, the book has an excellent topical index and an index of names. Both of these are essential in a work that by nature fructifies in our imagination and to which we return for further contemplation.

The content of the book defies clear summarization since it is in method and substance a sustained yet circling meditation that opposes our critical conventions of abstraction and clarity. The line of thought can be seen, however, by the trajectory of Poteat's search for a post-critical logic. When Polanyi asks in Personal Knowledge: "Can science be said to rest on specifiable presuppositions, be it on rules of correct procedure or on substantial beliefs about the nature of things," Poteat points out that Polanyi's question implies that a scientist can be engaged in inquiry and practice that may or may not be "exhaustively reflected and identified" (p. 11). Here we have the basic Polanyian problem, the relation of the explicit and the tacit. However, Poteat does not then expound the Polanyian answer. Instead, Poteat takes up the problem with Polanyian understanding and notices that Polanyi himself is struggling in the accepted language of the philosophic tradition to say things that do not fit the language usage. This realization leads Poteat to observe that Polanyi's use of language is more radical than Polanyi's "explicit attack upon the regnant view of the nature of scientific knowing . . ." (p. 13). Polanyi's use of concepts such as assumption, rule, presupposition, and logic is reaching beyond the limits of the critical philosophic tradition. Polanyi's use of these terms includes a tacit dimension disallowed by Cartesian lucidity.

Why Polanyi is having to stretch and to alter the customary usages of language is clarified by Poteat's pursuit of the way logic is rooted in our bodily being. Poteat claims "that language—our first formal system—has the sinews of our bodies, which had them first..." (p. 9). It is this reclaiming of the bodily presence in our mind that guides Poteat. His search is determined by this alternate logic, the logic of the mindbody, so his topics and questions revolve

around our somatic being. Diligently he follows the clues that arise from the rhythm and pulse of life. This route takes us then from the tactile toward the articulate, from the preformed connections inside us to the performed expressions of culture. Language seems to be Poteat's principal method and source for answers, but it is language reconnected with its bodily origins and consequently the organic world of nature. Poteat describes the way vision from the Greeks onward rose to the modern ideal of objectification. He also explores the way hearing in music and in speech lead us to see mindbodily relations of key logical concepts such as "necessary" and "contingent." He follows the critiques of other anti-Cartesians, Chaim Perelman and Walter Ong, and shows how their own use of the language in a modern critical way thwarts their purpose. When Poteat ends, one has experienced what it is to know inwardly that knowing and being cannot be separated.

What then does such an original and idiosyncratic work have to say to the science and religion dialogue? Its implications are vast even though Poteat is not discussing specific science and religion issues. First, Poteat gives to all who will suffer with him a way of reflecting upon their own mindbody as they do their work. Second, he gives deeper meaning to the now accepted wisdom that the language of science is a special language of a special community. Third, he shows the mindbodily common ground of all knowing that issues into scientific imagination. Fourth, he awakens our sense of loss if we define and limit our reality to the belief in absolute critical lucidity. Finally, Poteat shows that there is no easy way to reform. Education and argument in the Enlightenment style will not loosen the control of the Cartesian ideal. Rather, taking time, taking our own feelings and imagination, we can discover that our bodies, our objects, our world are generated out of a reality more archaic and more lively than anything we can say.

It will take some years to appreciate and to grasp Poteat's contribution. His search for a post-critical logic gives us an alternative picture. I think Polanyi may not have been as "unwitting" in his use of language as Poteat suggests since Polanyi already had the difficulty of trying to address the scientific and philosophic establishment. Poteat has definitely added a new dimension by showing the sense of logic in a language of a mindbodily world. In effect, he has given voice to what Polanyi was addressing.

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Michael Polanyi: A Critical Exposition By HARRY PROSCH. Albany, N.Y.: SUNY Press, 1986. 354 pages. \$14.95.

In this volume Harry Prosch sets forth what he takes to be the substance, scope, and excellence of the thought of Michael Polanyi, a figure he believes has generally been misunderstood or ignored by contemporary philosophers. The author was Polanyi's collaborator late in Polanyi's life and was responsible for the publication of *Meaning*, a final Polanyi book which elicited a sharp critical debate that became the focus for an issue of *Zygon* (vol. 17, no. 1 [March 1982]).

In his first 200 pages Prosch elaborates in detail Polanyi's ideas. This exposition unfolds in three sections organized around medical metaphors representing Polanyi's analysis of the misdirection of the modern mind and the affirmations proposed as necessary for redirection. The first three chapters, which constitute Polanyi's "diagnosis" of the plight of the modern mind, Prosch summarizes as follows: "... the modern mind is suffering from two diseases. These consist of two false ideas: that of detached objectivity or explicitness as the ideal of knowledge and that of perfectionism as the ideal in moral and social concerns. Together these two ideas—actually incompatible—have worked themvelves into what he called 'moral inversion' "(p. 205). Prosch describes Polanyi's "prescription" to heal the modern mind in the next five chapters focusing upon Polanyi's basic epistemological model and his constructive philosophy of science. The final five expository chapters round out the presentation of broader dimensions of Polanyi's constructive thought by developing Polanyian perspectives on self and world which are built upon the epistemology.

In this reviewer's judgment, Prosch is a careful reader of Polanyi although his interpretation of some points is incorrect and his exposition needs to be seen in its proper context. The opening three sections, Prosch claims, chiefly restate Polanyi's positions in order "to show how the various subjects and areas he had taken up belong together in terms of his fundamental objectives"; the author contends he is thus doing "for Polanyi's work something which no one has yet done, not even Polanyi himself" (p. 8). Prosch's conception of his own work indicates the perceived need he intends to meet, but his underlying judgments can be disputed. I doubt in principle that there is just one way to organize a persuasive, unified presentation of the ideas of a complex thinker such as Polanyi. Richard Gelwick's The Way of Discovery is an older but serviceable introductory exposition which sets forth Polanyi's basic objectives and nicely unites different elements of Polanyi's thought. Prosch has charged (Ethics, 89 [Jan. 1979]: 211-16) that Gelwick's book is an incomplete, overly general exposition; it misrepresents Polanyi's ideas about discovery because it fundamentally misconstrues Polanyi's conception of knowledge in art and religion. Prosch's response launched a major discussion among scholars which spilled over into the special issue of Zygon that focused on Polanyi's ideas about science and religion. Since several issues treated in that discussion surface again in his book, a sober appraisal of Prosch's exposition must insist that it be seen against the backdrop of ongoing discussions about Polanyi's ideas. In the final analysis Prosch's curious claim (quoted above) regarding the uniqueness of his treatment of Polanyi's thought is a claim about what he sees in Polanyi, Prosch is a moralist interested in large issues. His device for reviewing Polanyi's thought allows him to fold in the diverse bulk of Polanyi's ideas while never losing sight of Polanyi's critique of modernism and his reconstructive vision. In a sense Prosch's exposition is all of Polanyi seen from the vantage of *Meaning*, the last and most synthetic Polanyi work which in fact Prosch put together for Polanyi.

In many ways the organizational motif, healing the modern mind, used in Prosch's exposition works well, since it gathers together themes central in Polanyi. However, it does have drawbacks. First, it sacrifices a more developmental perspective on Polanyi, as Prosch acknowledges. Polanyi himself occasionally noted that his ideas changed. Prosch's exposition reflects his primary commitment to present Polanyi as a thinker whose ideas are logically coherent, comprehensive in vision, and revolutionary for the philosophical tradition. This agenda leads Prosch to represent Polanyi's ideas somewhat unhistorically,

laying side by side ideas occupying Polanyi in different periods of his life. Prosch certainly understands when and how particular Polanyian interests and ideas develop, but his readers are not provided much context with which realistically to understand Polanyi in terms of his intellectual pilgrimage.

A second consequence of Prosch's organizational motif is that it emphasizes certain kinds of Polanyian themes which more readily fall under the "sickness-to-health" metaphor. As noted above, it is these themes Prosch finds most important; some other themes get shorter shrift. Prosch does not, for example, emphasize the communal, fiduciary, and skillful nature of knowing or the convivial and aesthetic motives in knowing as much as does Polanyi in works published before *Meaning*. My preference would be to focus more on such themes even if it meant less symmetry in the exposition's architectonic which is centered around the images of diagnosis and cure.

All things considered, Prosch's exposition covers the bases of Polanyi's work. Yet the image of Polanyi's thought in Prosch's tightly woven presentation is a bit too well groomed. Compared to most of Polanyi's own writing, this is a somewhat dry and conservative account. I wonder whether Prosch's approach will in fact prove an effective way to interest philosophers in Polanyi's work.

The last third of the book, comprising seven chapters, is a critical discussion and evaluation. Here Prosch chiefly responds to three types of criticisms and interpretations of Polanyi's work offered by knowledgeable, sympathetic scholars. This section is an important contribution to scholarly discussions about Polanyian perspectives. It will be very interesting for seasoned Polanyi students and should also be an illuminating orientation to issues for the introductory reader.

The philosopher Rom Harre has argued that Polanyi's basic distinction between subsidiary and focal awareness aptly describes the elements of perceptual but not conceptual knowing. Prosch devotes a chapter to Harre's criticisms of Polanyi, which he sees as important because they revolve around basic questions about propositional knowledge and logic. Prosch argues that Polanyi affirmed a logic of tacit inference which is not explicit logic, although it operates in all forms of judgment. Knowing, whether perceptual or conceptual, is a nonexplicit integrative act accomplished by a mind. Prosch concludes that the burden of proof for those who, like Harre, insist propositions are best viewed as having an explicitly logical derivation, rests upon demonstrating that some knowledge is wholly explicit.

Besides Harre, challenges to Polanyi treated by Prosch all concern criticisms of broader implications of Polanyi's basic epistemology. Prosch contends such broader implications (i.e., Polanyi's ideas about psychology, biology, art, religion, etc.) "are in very complex ways related to the ontological hierarchy, and no writer has put his finger upon this fact" (p. 208). Prosch is correct in identifying Polanyi's ontological claim that the world is hierarchically structured as the analogue of his "from-to" epistemological structure and the foundational idea grounding broader Polanyian views of self and world. Chapter 17 ("Is Epistemological Antireductionism Sufficient?") focuses upon what Prosch takes to be critical views of Marjorie Grene concerning Polanyi's hierarchical ontology. Grene, an American philosopher who helped Polanyi put together *Personal Knowledge*, was for years, as a professional philosopher, Polanyi's tutor and critic. Grene has criticized Polanyi's ideas about emergence (articulated most fully in Part IV of Personal Knowledge) as well as Polanyi's late work on art, metaphor, and religion published (with Prosch's help) as Meaning. Grene seems to believe that Polanyi's two-level ontology slips into a metaphysical dualism which Polanyi's basic epistemological model (the "from-to" operation of tacit knowing) had in fact overcome. As Prosch notes, most of Grene's critical comments have concerned her uneasiness with Polanyi's response to behaviorism. In arguing against the reductionism of behaviorism, Polanyi seems to argue for the mind's separateness from the body and this seems to be a departure from the implication of the theory of tacit knowing which affirms that the mind is incarnate. Against Grene, Prosch argues that Polanyi did not "reintroduce Cartesian dualism into his system. The mind and body are different but there are no unincarnate minds for Polanyi" (p. 229). Prosch presses matters further to argue that Grene's criticisms mean she believes Polanyi's epistemological innovations alone are sufficient to refute reductionism (hence the chapter title). Prosch believes Polanyi saw the necessity of taking another step against reductionism: Polanyi wanted to move into a truly "post-critical" philosophy (as is indicated in the subtitle to *Personal Knowledge*). He therefore took a philosophical giant step into ontology in affirming that it is reasonable "to assume that there is a marvelous coincidence between the way we know things and the way they are, in and of themselves, in the universe" (p. 225).

While this chapter is the most philosophically interesting in Prosch's book, there are many matters included here which Polanyi scholars will likely debate. Although Grene has been critical of Polanyi's late thought, her published criticisms have been scanty. Prosch builds his chapter's rather elaborate argument around one brief Grene article in which her criticisms do not, to this reviewer, seem fully developed. However, whether Grene actually holds the position attributed to her is a smaller concern than the general manner in which Prosch frames the issues regarding the interpretation of Polanyi's thought. Prosch argues that Polanyi did not intend to reintroduce a mind-body dualism in his late thought; but clearly, as Prosch sees, the broader issues go beyond mind-body separation and concern what sense to make of Polanyi's ontology. The larger question posed in Prosch's chapter title ("Is Epistemological Antireductionism Sufficient?") however seems to be primarily an answer masquerading as a question. The question can be transformed into another question which highlights certain tacit presuppositions held by Prosch as he interprets Polanyi: Why assume that Polanyi presupposed a foundational separation of subject and world (knower and known) which must then be breached (as Prosch argues Polanyi did) with an ontology? Such a question perhaps follows out the line of thought which Prosch attributes to Grene. A reading of Polanyi's thought which more strongly emphasizes the social, skillful, bodily, and fiduciary roots of knowledge avoids a starting point for reflection which presupposes the isolation of the knowing subject. In my judgment, Prosch's interpretation of Polanyi generally assumes Polanyi is a much more traditional (and Cartesian) philosopher than in fact Polanyi is. Prosch often reifies distinctions carefully drawn in Polanyi's thought and de-emphasizes continuities; the image of Polanyi's thought presented by Prosch is thus much more dichotomous than need be.

Prosch recognizes that criticisms regarding bifurcations in *Meaning* and/or his interpretation of Polanyi have already and will again be levied. Meeting such criticisms head on is the substantive agenda in the last several chapters of his book. Prosch argues Polanyi clearly recognized a fundamental methodological difference between the from-to structure of knowing that operates in perception and science and that which operates in art and religion. The self-centered integrations of perception and science project a focal object away

from a center into a reality understood by us to be existing independently; such a reality for Prosch "can never be incorporated completely into our own being" but "remains a separate being in itself" (p. 235). The self-giving integrations in areas such as religion attend to entities which should not be described as factual or independent realities; such realities are "real in being valid" but it is "an illusion to think they existed before we discovered them" (p. 249). Is this divarication sound or, as Prosch believes Grene thinks, does it merely blunt the edge of Polanyi's own sword by reintroducing a cleavage between science and the humanities?

Prosch thus frames the issue but he addresses his query in a strange way. He introduces at length the thought of the Christian theologian Thomas Torrance (Polanyi's friend and the literary executor of Polanyi's estate) who made ample use of Polanyi's ideas in his revisionist neo-orthodox theology. Torrance argues that theology is a science. Prosch sees Torrance as typical of those interested in using Polanyi in religious studies and theology; most religionists fail to grasp the import of the distinction Polanyi drew between the nature of realities known in art and religion and those known in perception and science. Prosch spends an entire chapter detailing the several ways in which he believes Torrance misconstrued Polanyi's ideas about religion, including this basic distinction. Since the publication of Prosch's book, Torrance has published a letter (Tradition and Discovery: The Polanyi Society Journal 14 [Fall 1986-87], p. 31) claiming he was asked to become Polanyi's literary executor because Polanyi was concerned with the prospects for his ideas and was unhappy with the slant put forth in Meaning; Torrance implies Polanyi subscribed to many of the religious ideas formulated in his own writing. Prosch's response to Torrance's letter (Tradition and Discovery: The Polanyi Society Journal 15 [Winter 1987-88], pp. 24-35) denies bowdlerizing Polanyi's work and outlines historical events leading to the publication of Meaning. To this reviewer, many of the points Prosch draws distinguishing Polanyi and Torrance's views are solid, although I think Prosch is fundamentally in error in trying to distinguish too sharply the realities known in perception and science from realities known in art and religion.

In a complementary chapter following the treatment of Torrance, Prosch examines criticisms put forth by Sheldon Richmond and Ron Hall, philosophers who, unlike Torrance, do not ignore Polanyi's distinction between scientific and religious knowledge but attack the distinction though from different directions. Prosch thinks Richmond and Hall also fail to grasp Polanyi's distinction between the kind of realities with which science is concerned and those with which art and religion are concerned. He insists that Polanyi, at least from the period of *Personal Knowledge*, held such a distinction, which he (Prosch) judges to be basically sound. However, Prosch also suggests that Polanyi's ideas about religion may be inadequate; he seems much more impressed with Torrance's supernatural, revelatory deity than he allows Polanyi would have been.

While Prosch's last chapters are interesting, they are also somewhat disappointing. They adopt a circuitous route to address fundamental issues which could be treated more directly. In the way Prosch draws Torrance into the discussion as a foil and an exemplar, the issue of the nature of realities known in art and religion gets conflated with the more general issue of how Polanyi thought about religion; Polanyi's ideas, in turn, are contrasted with ideas of Torrance as well as Richmond and Hall. Although there is more rhetorical flourish here, Prosch has not significantly changed the views he presents as

Polanyi's stance on realities of religion in his earlier *Zygon* article (vol. 17, no. 1 [March, 1982]: 41-48). What is somewhat clearer in this volume is the way in which Prosch's reading of Polanyi on religion fits with a broader—and, to this reader, peculiar—interpretation of Polanyi's ontology.

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Notice

The Institution of Electrical Engineers has agreed to fund preparatory work for an edition of the complete correspondence of Michael Faraday. The work will be conducted by Dr. Frank James, lecturer in history of science at the Royal Institution of Great Britain. While the Thomas Martin edition of Faraday's laboratory notebook, Faraday's Diary (7 vols. Bell, 1932-1936) is an invaluable resource, it does tend to portray Faraday as working alone. The complete correspondence will allow scholars to locate Faraday properly within the scientific community. Less than half of his letters have been published and these have appeared in multiple sources making it difficult to place Faraday in his proper context. This edition can only be made complete with the cooperation of the possessors of smaller collections of Faraday's scattered correspondence. It is hoped that librarians, collectors, scholars, antiquarian booksellers, and others in possession of letters both to and from Faraday will make these available to the project. Please contact Dr. Frank James, RICHST, Royal Institution, 21 Albemarle St., London, WIX 4BS, England.