

## Identification of the Mosses

Identification of the mosses will prove to be a very rewarding laboratory experience. It is not so difficult that the inept biology student cannot handle it, yet it is sufficiently challenging that the more advanced student will find the final verification rewarding. After an introductory discussion of the anatomy of the mosses, the laboratory session should first be directed at the familiarization with the parts of the moss that will be indispensable in its identification. The shape and the outline of the leaf should first be examined. Is the seta long or short, textured or smooth, and of what color? Is the capsule, or spore case, erect, inclined, or nodding? Is it symmetrical or asymmetrical in cross-section? Is it smooth, ribbed, or strumose? Is the calyptra cucullate or mitrate, hairy or smooth?

### Laboratory Procedures

If the laboratory work is divided into two

separate procedures, identification of the moss and specific examination of the individual moss plant, the students will learn more and will find the work more interesting. The layout of the work sheet can be quite flexible. In our specific location, the growth of the mosses is abundant, and routinely I require each student to provide his own specimens.

### References

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## Book Reviews

All unsigned reviews were made by Editor.

### Philosophy of Science

SCIENCE AND ETHICAL VALUES, Bentley Glass, 101 pp., \$3.75, The University of North Carolina Press, Chapel Hill, 1965.

Another one of these series of splendid essays by Glass which was given as a group of lectures. This series gives a sweeping view of modern biology and attempts to show that the biologist is very much involved in values and that the scientist is no longer in an ivory tower, if he ever was at all. The ethics of science, he believes, have a wide application in many other fields beyond the sciences.

In his survey of biology, he emphasizes, of course, the tremendous strides in our knowledge of human genetics and that evolution is a logical framework on which to evaluate human progress. His point of the equality of intelligence of Cro-Magnon man versus that of modern man indicates that the only variable factor to demonstrate progress is an accumulated knowledge and wisdom which is translated into an entire culture. Thus evolution is chiefly the placing of many more alternatives for man to express his genetic capabilities.

An intellectually inspiring book for all biologists.

THE FUTURE OF MAN, Pierre Teilhard de Chardin, 319 pp., \$5.00, Harper and Row, New York, 1964.

"The Future of Man," an elegant and authoritative translation by Norman Denny of Teilhard de Chardin's "L'Avenir de l'Homme", is a welcome addition to the literature on evolutionary theory. Teilhard de Chardin was both an eminent Jesuit and an accomplished paleontologist who pioneered in promoting a greater understanding for evolutionary studies among theologians. This collection of writings, each of which represents a blend of science and meditation, deals with a wide variety of thought-provoking topics such as Social Heredity and Progress, Some Reflections on the Spiritual Repercussions of the Atom Bomb, Faith in Man, Some Reflections on the Rights of Man, and The Essence of the Democratic Idea, From the Pre-Human to the Ultra-Human.

The central theme of this book is that man occupies the topmost point in biological evolution, because *Homo sapiens* has acquired not only the highest degree of consciousness but also a degree of expansion equal to, or even greater than, the greatest vertebrate layers that ever inhabited the earth. The author elaborates on the fact that neo-Darwinians are right in assigning chance selection as the major evolutionary force in pre-human evolution. The neo-

Lamarckians, however, have the better argument from the time of the appearance of *Homo sapiens*. With the appearance of man a reflective purposiveness becomes the major force in the auto-evolution toward greater complexity and fuller consciousness embodied in the future Ultra-Human. A crucial question in this connection is: "What system of genes would be as capable as our immense educational system of indefinitely storing and infallibly preserving the huge array of truths and systematized technical knowledge which, steadily accumulating, represents the patrimony of mankind?"

This book is a refreshing philosophical essay on human evolution. Some parts are mystical rather than scientifically objective visions of this dazzling universe, but in each chapter the reader may catch some gleams of enlightenment and brilliance of this great scientist and deeply religious man. The last chapters give us an honest view of what the end of the world and of man may be, a view rooted in three verses of St. Paul in which this "pilgrim of the future" believed.

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### Earth Science

DOWN TO EARTH, Carey Croneis and William C. Krumbein, 499 pp., \$2.95, Phoenix Science Series, University of Chicago Press, 1961.

After a long history of acclaims and many printings, *Down to Earth* has been re-issued in paperback, essentially unchanged. It would seem inappropriate to describe a thirty-year old book as fresh, yet that is the best succinct appraisal of this one. The authors convey the excitement of discovery in a descriptive science.

The book was intended to be a layman's introduction to geology. In many ways it reads more like a letter from the town gossip, an air of "There's so much exciting news I just have to tell it all at once." In telling their story then, the authors tried bravely to define technical terms by context as they introduced them, sometimes in italics, sometimes in bold-faced type. However, one is never quite certain whether a given word is being defined or emphasized, only that on some pages it looks like half the words are being so stressed. This is rather like the gossip's ending *every* sentence with exclamation mark!

The most unusual mixture of narrative, conversational, and pedagogical styles keeps the reader off balance. For instance, in the space of a couple pages we go from admiring the

pretty "jeweled" pavements of the picturesque town of Niedermendig in the best *National Geographic* manner to a quick discussion of the phase behavior of silicate melts. It's fun.

It was difficult, even a generation ago, to discuss geology without more than a nod to physics and chemistry. The authors were frank in admitting that they must avoid all things that, in their apt words, "bristle with mathematical symbols." Approaching historical geology they emphasized the dramatic, the bizarre, and the economic deposits—they almost thanked the Pennsylvanian Era personally for giving us riches in coal and oil. There is a regrettable lack of exposition of biological bases for evolution. Was the Scopes trial still too fresh in their minds?

I would unreservedly recommend this book to anyone with even a flicker of interest in any branch of science. It should be read, not for the information (and mis-information) it contains, surely not as an example of clarity of expository writing, but for the wonderful sense of enthusiasm which pervades the book and envelopes the reader.

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### Health

HOW TO OVERCOME EMOTIONAL STRESS AND REGAIN YOUR HEALTH, Stephen J. Tracy, 244 pp., \$4.95, Plymouth Books, New York, 1965.

It is the opinion of this reviewer that this book is a potential hazard to the health of the reader. It may cause a person to turn his back on (or delay) sound medical treatment and information in place of the "self-help" health program advocated by the author.

Few people would deny that emotional problems exist in our society, that stress is a factor in the development of these problems, and that these stresses may be manifested in physical symptoms. However, this book exaggerates the relationship between emotional stress and some of our major diseases; tuberculosis, cancer, heart diseases, hearing loss, loss of sight, arthritis, diabetes mellitus, and ulcers to mention a few.

The author cites examples to "prove" this relationship by stating: Emotional stress must be treated to permanently cure these disorders; That the *cause* of a friend's cancer was the stress of his job demotion; ". . . if the diabetic were treated for the emotional stress that *caused* his illness he would . . . be able to live a longer live . . ."; "when Mr. P. realizes why he developed glaucoma you can be sure that his eye will heal up and *never* trouble him again."