

## Confirmed stereotypes transformed to freedom and variety

### Women in Science: Portraits from a World in Transition

Vivian Gornick

172 pp. Simon & Schuster, New York, 1983.

\$15.95

Reviewed by Dorrit Hoffleit

Discrimination against women in science continues to be a popular topic. Vivian Gornick has amassed a wealth of instances and reached conclusions of interest to anyone concerned with the advancement of professional women. In the introduction she states, "This book is not a comparative study of men and women in science nor is it a statistical survey or a sociological analysis. It is a work of impressionistic journalism reflective of the way I received and interpreted a piece of experience." Toward the end of the book, however, under "Feminism and Science," she does discuss various points of view that have been expressed on supposed differences between men and women scientists.

Gornick has interviewed over 100 women between the ages of 24 and 78. She presents summaries of the interviews, but to preserve anonymity she has fictionalized both the name and field of specialization of each of the women cited. While this precludes checking or statistical use of the material by others, I find her overall picture quite familiar, with nothing particularly new or surprising. In a comparison of women scientists aged 65-85 with younger women ages 25-55, she found that "an overwhelming majority" of those in the older group "conformed to the stereotype.... There was about them a uniform remoteness of manner and expression. The pose was haughty and aristocratic, the speech guarded, the personality masked, defensive, unknowing." In contrast, among the younger group, "It is the range of temperamental difference



**Women examining plates** at Harvard College Observatory. The astronomer E.C. Pickering was one of the first to encourage women to pursue scientific work, employing large numbers to examine and catalog the Observatory's collection of plates. (Harvard College Observatory photo courtesy AIP Niels Bohr Library.)

among them that sets the young woman off from the old, reveals the meaningful passage of the generations. Even in outline, a group portrait of contemporary women scientists is ripe with significant variousness." Obviously! But is the reason for the difference to be attributed wholly to the decline of job discrimination, as Gornick implies when she writes, "At no moment before this have women scientists been free to be themselves; the exhibition of 'temperament' and human variousness among them is a true event in scientific life; it signals a transformation; it means we have arrived.... enormous change is in progress."

I happen to belong to the older age group. Remembering my contemporaries at Harvard Observatory from 1929 to 1956, I maintain they showed as much vitality, diversity, enthusiasm and devotion to science as do the young women of today. However, people do age: Their reflexes become slower;

they tend to become hazy and forgetful; and with most of their lives behind them, it no longer seems necessary to be demonstrative as many of them were in their youth. A comparison between old and young men would probably yield quite similar differences to those Gornick found for the women. As some old grave stones tell:

*As you are now, so once was I;*

*As I am now, so you shall be.*

Gornick does not separate the two variables: age and "women's liberation." A valid comparison of the effects of the latter on acquired personality traits can only be made some 30 to 40 years hence, when the current picture of the old group is compared with what the currently younger group will be like then.

The injustices in both pay and job security to scientists (mostly women, as Gornick stresses) holding the Research Associate positions, relative to those on tenure track, are still rampant and need to be fought as forcefully as any

Dorrit Hoffleit, a retired Senior Research Astronomer at Yale and herself a target of discrimination, has published biographical sketches of Maria Mitchell and her famous students, and of women at Harvard Observatory under E. C. Pickering.

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other case of job discrimination. Many, but not all the women holding this title, were appointed merely as assistants to someone in tenured or tenure-track rank. Nor were the men invariably the ostensible principal investigators who applied for, and received, grants. I, for one, held this lowly rank but nevertheless worked and published independently and received numerous grants in my own name.

The astronomer E. C. Pickering (1846-1919) of Harvard has frequently been criticized for assigning to women only subordinate or routine tasks. One should, however, remember that he was among the first to open the door, at least halfway, to women. The first pioneering step in opposition to tradition is always the hardest.

Readers will find what Gornick presents informative and stimulating. As she demonstrates, women have won much ground since World War II, but vigilance on their behalf is still in order.

## Supersymmetry and Supergravity

J. Wess, J. Bagger

180 pp. Princeton U.P., Princeton, N. J.,  
1983. \$40.00

*Supersymmetry and Supergravity* by Julius Wess and Jonathan Bagger, based on lectures given by Wess at Princeton University, is an introduction to  $N=1$  supersymmetry and supergravity ( $N$  represents the number of spinorial charges in the underlying supersymmetry algebra). The first part of the book deals with developments in global supersymmetry leading to the construction of supersymmetric gauge theories; the second extends these constructions to local supersymmetry. Throughout, the book is concise, to the point, and enjoyable.

It is more than a decade since the idea of supersymmetry was introduced in particle physics. During the intervening years there has been a phenomenal growth in our understanding of supersymmetry and its local counterpart, supergravity. The basic attraction of supergravity is that it provides the only conceivable theoretical framework that allows for a possible unification of gravitation with the other fundamental forces of particle physics, that is, the electroweak and the strong interactions. While supersymmetry and supergravity have been, perhaps, the most novel innovation in theoretical particle physics over the past decade, their relevance to nature remains to be tested. According to the current thinking, we have the best chance of observing supersymmetry in the effects predicted by the unified gauge models that have recently been proposed using  $N=1$  supergravity. Most of the pre-

dicted effects are small, consistent with known experiments, and require further refinements in the experiments or higher energies (perhaps in the TeV domain) for their observation. Supersymmetry just might be a new frontier of particle physics. The current stage of interest in supersymmetry and supergravity is based on this hope.

This book, however, as the authors themselves point out, is not meant to be a systematic development of the subject. It does not compete with the 1977 *Physics Report Supersymmetry* of Pierre Fayet and Sergio Ferrara, the 1981 *Physics Report Supergravity* of P. van Nieuwenhuizen or the more recent book *Superspace* by S. J. Gates Jr, Mark Grisaru, Martin Rocek and Warren Siegel. The book does suffer from a paucity of references to the work of other authors, which might be caused by the motivation behind the present book. Wess remarks in the preface that the book is an attempt to explain the approach he and Bruno Zumino followed in their work on supersymmetry and supergravity. In this explanatory effort the book undoubtedly succeeds.

The introductory nature of the book makes it useful for beginners to gain a quick entry into the field and to develop a working knowledge of supersymmetric gauge theories. However, because most of the recent developments are sidestepped completely, researchers in the field would find it less attractive.

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## Introduction to Health Physics. Second Edition

H. Cember

519 pp. Pergamon, New York, 1983. \$60.00  
cloth, \$29.50 paper

The long-awaited second edition of Herman Cember's *Introduction to Health Physics* is a welcome sight. The 1969 edition has served seniors and first-year graduate students well as a text in radiation protection. The new work is timely, because much of the original material is now out of date.

Health physics, aiming to protect human beings and their environment from radiation, balances the need to reduce exposures to radiation as much as practicable against the benefits radiation can bring to physics, medicine and industry. Cember's book gives a systematic treatment of the relevant physics behind radiation protection and, applying the physics, describes methods for monitoring radiation and controlling exposures. Until several years ago, "radiation" in health physics meant ionizing radiation; today, health physicists are also concerned with non-ionizing microwave and laser radiations.