tegral operators. The second part includes existence and deformation of complex structure on manifolds and index of elliptic operators.

In "Generators and relations in groups—The Burnside problem," Marshall Hall, Jr., discusses, among other topics, the "word problem," the unsolvable problems, free groups, and the Burnside problem. He states a dozen or so intriguing problems. (It is unfortunate that the references are incomplete, ending with number 34, although the text list references with numbers as high as 70.)

"Some aspects of the topology of 3-manifolds related to the Poincaré conjecture," by R. H. Bing, is a thorough account, with the necessary definitions and examples that a nonspecialist might need, and with excellent illustrations. The topics include fake cubes, curves encircled by tori, and nice shrinking. The final section is an answer to the question "Why are mathematicians interested in finding a solution to the Poincaré conjecture?"

There are two lectures by Lars Gårding: the first is "Some problems in the theory of partial differential equations," and the second is "Uniformization in Cauchy's problem." The first includes Sobolev spaces and boundary problems, hyperbolic equations, and Frobenius's theorem. The second lecture has sections in uniformization and the geometry of uniformization.

A sentence in the introductory section of "Quasiconformal mappings and their applications," by Lars V. Ahlfors, reads as follows: "An excellent way to acquaint the mathematical public with the trends in my special field is to relate some of the experiences of this author and fellow specialists in dealing with the heritage of Teichmüller." The article includes quasiconformal and conformal mappings, extremal problems, and the generalized Riemann mapping problem. At one point, the author remarks, "Quasiconformal mappings have found their place in the toolkit of the well-equipped analyst, and that is that." (It is not helpful to the not-so-well-equipped analyst to find that there is no list of references.)

The final lecture in volume 2 is "Differential topology," by J. Milnor. Here the reader is introduced to such topics as the diffeomorphism problem and the cobordism problem. (The nonspecialist who may be alarmed at the new words may be more at ease when he learns that a diffeomorphism is a smooth homeomorphism with a smooth inverse and that "smooth" means "differentiable of class C^∞.") The author discusses characterizations of the n-sphere, some exotic spheres, and how to recognize an honest sphere. The illustrations are excellent.

As I remarked in my review of the first volume [*Science* **142**, 1049 (1963)], it is difficult to judge the success of the actual lectures. However, it should be reported that, if I were that graduate student mentioned in the preface, embarking on a research career (heaven forbid!), I would be dismayed rather than encouraged by the two articles on partial differential equations. On the other hand, the remaining four articles are of such a nature that I would be interested enough to want to know more.

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Popular Astronomy

Astronomy Highlights. *Apollo and the Moon* by Franklyn M. Branley; *Birth and Death of the Stars* by Kenneth L. Franklin; *Captives of the Sun: The Story of the Planets* by James S. Pickering; *Design of the Universe* by S. I. Gale; *Man in Space* by Fred C. Hess; *Space Age Astronomy* by Kenneth L. Franklin; *The Sun in Action* by Thomas D. Nicholson; and *Time and the Stars* by Joseph M. Chamberlain. Published for the American Museum-Hayden Planetarium by Natural History Press, Garden City, N.Y., 1964. 32 pp. each; paper, 50¢ each.

Riddles of Astronomy. Otto O. Binder. Basic Books, New York, 1964. xiv + 210 pp. Illus. $4.95

The present interest in the space age has resulted in the publication of many books that attempt to explain the new ideas of astronomy and space exploration for the layman. At best these books show how astronomers and other scientists work, how they gather observational data and draw conclusions, and the current status of our knowledge. The poorer books go off into wild flights of imagination in which all hypotheses are accepted and no attempt is made to distinguish between commonly accepted data of observation and figments of the imagination. The two works under review illustrate these two approaches.

The series, Astronomy Highlights, from the American Museum-Hayden Planetarium presents an excellent introduction to some of the fields of modern astronomical research. Each booklet takes one subject and covers this subject with a good review written in layman's language. The writing is factual, with good emphasis on the current status of our knowledge of the field and of some of the problems not yet solved. The booklets contain a great deal of information presented on a level that can easily be understood by the high school, and the intelligent junior high school, student. Each booklet serves to lay the foundation of the subject and to provide a good starting place for further study in the references contained at the end. They are highly recommended as good examples of popularizations for high school and junior high school students.

Riddles of Astronomy presents an array of real and imagined problems in astronomy. The philosophy of the book is best illustrated by the author's statement that "perhaps the sinking of Atlantis was the ruthless act of cosmic conquistadors"; he then goes on to say that such an idea is " . . . sheer speculation perhaps. Fanciful, fiction-like, wildly imaginative, improbable. But not impossible." The book presents a collection of other "not impossible" ideas such as artificial Cepheid variables programmed by an advanced civilization to send code signals; silicon men on Mercury with glassy fluids in their veins; the artificial nature of the two moons of Mars; and the suggestion that the Siberian meteor of 1908 was a visiting space ship from an antimatter universe. The following statement is made in the foreword: " . . . the host of significant questions asked ensures the merit of this book." But I find little merit in such questions as the following: "Are other Star-Sun people Monsters? Does the phantom satellite of Venus exist? Can Hypotheticus, if it turns up, really be good instead of bad luck?" And many others of similar nature. The book as a whole is a distortion of the scientific thinking of astronomers today.

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