Books

RADIANT HEATING

by R. W. Shoemaker, '03
McGraw-Hill Book Co., New York, 306 p.p. $4.00

THIS IS A BOOK which ought to prove useful not only to the expert in the field of radiant heating but also to the amateur who is looking for information, or the householder who is considering a radiant heating installation. Profusely illustrated, it covers all aspects of the field—design, equipment, and installation —and manages to provide both technical and practical information in each case.

One of the most interesting sections of the book concerns the control systems available for radiant heating. These range from simple thermostats which maintain a certain temperature of water, to involved anticipatory systems which will predict imminent changes in the room temperature and also keep the water in the heating coils within adjustable maximum and minimum ranges. The anticipatory control involves the use of an exterior thermostat. This outside bulb notes a drop in the outdoor temperature and starts the ball rolling by means of a mechanical "brain" which can prepare the heating system to deliver heat as soon as the inside thermostat requires it, or can eliminate a drop in inside temperature entirely. Carrying the point even farther, a special outside thermometer has been designed which takes into account whether or not the sun is shining.

In the course of the book Mr. Shoemaker makes a pretty solid case for radiant heating. Some of the advantages he claims for it are worth summarizing:

1) It gives use of space taken by conventional heaters.
2) There is no need to worry about keeping furniture away from the heating area.
3) It makes possible relocation of partitions, is especially applicable to changing office installations.
4) It suppresses air currents and drafts.
5) It eliminates hot air ducts, and possible fire hazard.
6) The work of the heating contractor is finished at the time of rough construction.
7) It is cheaper by 20 to 30% (if you use it constantly during the winter).
8) Lower indoor temperatures are possible for the same sensation of warmth—less heat is lost to the outside through walls or open doors or windows because of the lower heat gradient.
9) It keeps your feet warm in a big office.
10) You can zone your coils to give more heat in areas near windows or doors, etc.

Despite this impressive barrage of advantages, the pipes, the boilers, the insulation to keep the heat from leaking to the ground, the circulating pumps, the valves, the fancy control systems needed for satisfactory operation, and the elaborate installation are all expensive items. A reader can't help figuring that, unless the heating bills were pretty high, it would take too long to pay for the setup by the economy of operation.

—Tom Tracy '48

MAKERS OF MATHEMATICS

by Alfred Hooper,
Random House, New York, 402 pp. $3.75

THE TITLE suggests emphasis on biography. Actually the biographical material is slight, except in the case of Newton, who gets 50 pages including the mathematical material. Lagrange and Gauss each get three pages; Riemann 15 words. In fairness to the author it should be said that he makes no extravagant claim for what he terms his "modest little volume" as that on the dust jacket: "Moving from primitive ideas of numbers to the most advanced concepts, it includes the contributions of Thales, Pythagoras, Archimedes, Euclid, Descartes, Newton, Leibniz, Gauss and the moderns." "The moderns" presumably would include the later contemporaries and successors of Gauss. In addition to Riemann with his 15 words, the moderns Dedekind and Cantor share one sentence. Other moderns — Abel, Galois, Cauchy, and many others — are not mentioned.

From the material presented, it appears that the author's aim is to give non-mathematical readers some idea of how **elementary** mathematics developed. After the first chapter of 26 pages on "The birth of numbers," the narrative ignores the Babylonians and passes at once to the Greeks, 57 pages, emphasizing their geometry. Then come similar chapters on the most elementary school algebra, 41 pages; the barest rudiments of trigonometry, 61 pages, followed by a chapter of 24 pages on the invention of logarithms. The sixth chapter on forerunners of Newton disposes of the lives and achievements of Galileo, Kepler, Tycho Brahe, Descartes, Fermat, Pascal, Desargues, Cavalieri, Wallis, and some others mentioned in passing, all in 79 pages. The emphasis here is on the early attempts to calculate areas, from Archimedes to Wallis. The chapter on Newton continues this theme, and there is an intuitive approach to the notion of a derivative hardly suitable for a college freshman who wishes to avoid an emphatic flunk.

Mathematics after Newton is covered in the 60 pages of the concluding chapter: "Leibniz, Gauss and Others." Fourteen pages of this chapter are devoted to a further elucidation of the calculus, Eighteenth Century style, and 14 to the graphical representation of complex numbers as in the usual high school course.

To sum up, the mathematical material presented is a small part of what a student in a reputable college or technical school will have mastered correctly by the end of his first term, or earlier in school, and in its most advanced parts, still elementary, is presented from the obsolete point of view of the Eighteenth Century. The layman may be incapable of understanding more. If so, his appreciation of mathematics as it is today, or even as it has been for over a century, will be negligible.

—E. T. Bell