

craters superimposed on them; some of these craters are flooded with mare material (of Procellarian age).

The map of the moon and of the Kepler region especially, has much of interest to the geologist studying the larger problems of tectonics. Numerous fault systems, anticlines, and structural depressions have been interpreted, and regional patterns are evident. The larger craters are not perfectly circular, but polygonal in form, resembling explosion craters in rocks that have pre-existing fracture systems.

The Kepler region map covers an area similar in size to the Columbia Plateau of Washington and Oregon. The anticlinal folds in the southwest of the Kepler region compare in relief and length with the system of anticlinal ridges in Washington that includes the Horse Heaven Hills, Rattlesnake Hills, and Saddle Mountains. The topography of the mare resembles the Columbia Plateau without its dissection by rivers, except for a sinuous rille (valley) 50 miles long in the northwest corner of the Kepler area. The craters do not resemble volcanic cones, but rather explosion craters in which a relatively low rim surrounds a depression. A crater the size of Meteor Crater in Arizona might appear as a very small feature on the Kepler map but is about the smallest that could be shown and might easily have been missed. The Chubb Crater in northern Quebec, 2 miles across, would appear as a small feature. A score of craters in the Kepler region have the diameter of Crater Lake, Oregon. The largest craters in the area, Kepler and Encke, have dimensions of the same order of magnitude as Mt. Rainier National Park, the city of Los Angeles, or Lake Simcoe, Ontario. Some "islands" or inliers of older material seem to project through the mare material as older rocks project through the lavas of the Columbia Plateau in northeastern Oregon.

Dr. Hackman has made full use of the data available to him through telescopic and radiotelescopic techniques in preparing his map of the Kepler region. The best observations of the moon are

very inferior in quality to corresponding observations of the earth, and substantial revisions may be expected when better photographs from satellites become available. Further substantial improvements in interpretation will be possible when field data are sent back by robots and subsequent human explorers.

The lay reader interested in Dr. Hackman's map of the Kepler region will appreciate references 3, 4 and 5.

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<sup>1</sup>Hackman, R. J. 1961. Photointerpretation of the lunar surface. *Photogrammetric Eng.* 27:377-86.

<sup>2</sup>Shoemaker, E. M. 1962. Explorations of the Moon's surface. *Am. Scientist* 50:99-130.

<sup>3</sup>Fiedler, Gilbert. 1961. Structure of the moon's surface. London: Pergamon Press, 266 pp.

<sup>4</sup>Hackman, R. J., and A. C. Mason. 1961. Engineer special study of the surface of the moon. U.S. Geological Survey, Misc. Geol. Invest. Map I-351 (Three maps showing physiographic divisions, generalized photogeology, and lunar rays, and a descriptive table.)

<sup>5</sup>Markov, A. V., ed. 1960. The Moon, a Russian view. (Nine articles on various aspects of the physical features of the moon by Russian workers.) Chicago: Univ. of Chicago Press, 391 pp. (1961 translation by Royer and Roger, Inc.)

NEW INDUSTRIAL TOWNS ON CANADA'S RESOURCE FRONTIER. By IRA M. ROBINSON. Chicago: The University of Chicago. 1962. (*Program of Education and Research in Planning, Research Paper No. 4; Department of Geography, Research Paper No. 73*). \$4.00.

Mr. Robinson's thesis is that because Canada's economic growth is stimulated by resource development on or beyond the frontier, the boom town in the bush is a recurrent and important feature of the Canadian scene and economy. His particular interest lies in the problems of town planning, but he also pays attention to local geography, town administration, inter-town relations, and

social structure. The objects of his case studies are Kitimat, Elliot Lake, Drayton Valley, and Schefferville,

"... because they are the most recent and probably the most well-known and ambitious of Canada's new resource towns... Hence, an examination of the planning and development problems faced in their construction, and the approaches used to cope with them, should produce some valuable guides for the future" (pp. 6-7).

The Author's familiarity with the objects of his case studies is not perfect and does not extend to all the towns he mentions in passing. For example, Yellowknife and Aklavik have not been "uprooted and then transferred to new sites..." (p. 129, note 1). Appendix A states that Aklavik, a regional centre, was established in 1957 — and that its population was 1,445 in 1956! Of course, Aklavik and Inuvik (the "new" Aklavik) are not the same place, and the newer town has by no means replaced the older. Another mystery is the "Northwest Territories" settlement of Great Whale River, listed in Table 1 as a regional centre, established about 1956, but listed in Appendix A as a gold-mining centre. Surely this is Great Whale River, Quebec, established for the fur trade in 1756 and recently made a radar site and administration centre.

Mr. Robinson's descriptions of the towns are useful from many points of view and should save other researchers much spade work. I was specially interested in his remarks about Schefferville. There are not, as Table 1 and Appendix A suggest, two towns, the second named Burnt Creek. (This confusion does not exist in the text.) Minor mistakes in the history of the region do not deserve space here. Descriptions of the process of site selection and of the problems of unexpected overcrowding of the selected site are good. Mr. Robinson has an interesting passage on the failure of the Province of Quebec "for reasons no

one is able to explain" to

"assume responsibility for organizing the townsite or providing the public utilities, services, and community facilities, as provided for in the legislation [Mining Act and Mining Villages Act]... Schefferville has turned out to be a 'company town' built under government supervision" (pp. 56-7).

He says the town limits of Schefferville are set at 25 square miles to avoid undesirable shacks on the outskirts of the townsite, but he says nothing about the Indian community some 4 miles east of the townsite, within the town limits, which was until 1960 a disgrace to the nation. It is now, fortunately, much improved but still substandard. The author avoids mention of the serious problems created by the confrontation of native groups with towns like Schefferville, a situation that cries for detailed investigation. The lessons to be learned in Schefferville about this problem could be applied in many other situations.

The most stimulating part of Robinson's study is his "Lessons for the Future". He deals in turn with the problems of poor site selection, inadequate townsite design, and unsatisfactory town administration. He properly reproaches the planners of new northern towns (and the persons who commission them) for failing to rise to the challenge of new problems in a different environment. The concepts embodied in the planning of Schefferville are appropriate perhaps to a Montreal suburb, which it closely resembles. Schefferville, the other towns studied, and all other new northern towns are evidence that their "planners have proceeded on the false assumption that in order to reproduce the living standards of the older more temperate south, it is also necessary to duplicate the southern urban patterns" (p. 136).

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