can we regain and maintain a stronger hand in the management area?” Perhaps by stressing the ability of range people, based on their broad background in training and multiple-use philosophy, to use animals as a tool in resource management we can become more effective land managers. My espousing of this point of view for nearly a year now has generally met with favorable response except for one authority in the field who regards this as the province of wildlife management. If wildlife managers were all knowledgeable re the basic resource (soils) and the raw materials (plants) and were effective in controlling numbers, I would agree. On the contrary, they are more commonly wildlife biologists. Range managers (despite the fact that some Federal agencies masquerade range as wildlife habitat as though it were something different when used by a wild animal) generally are more capable in the use of animals as a tool in land management and have at their disposal animals that can in fact be managed.

Perhaps at this point your question is—“what advantage have we gained in becoming identified with the ability of using animals as a tool in modifying natural environments?” The strongest asset of this identity is to be able to pinpoint something different in the capability of a range scientist that cannot, as a rule, be obtained from other professional land managers. In no sense are we detracting from the value of physiology, ecology, nutrition, economics, etc. in getting the job done. We’re merely hanging our hat on a peg with a minimum of overlap and confusion with other scientists with whom we work: agronomists, animal scientists, foresters, wildlife hirologists, and watershed managers to name a few. Yet we can and do manage animals in ways that are helpful to the objectives of all these allied professionals.

Range scientists viewed in this light have an increasingly important role to play in the intensive management of our natural resources. Animals using this range forage crop will continue to be one of our most effective tools in resource management. If we realize this fact, we will discover that range people have puttered around in the dark ages long enough and can make a long awaited and needed transition into the space age by asserting their capability of managing animals as a tool in the achievement of multiple-use goals.—D. W. Hedrick, Professor of Range Management, Oregon State University, Corvallis.

The Uniqueness of Range Management

While it is encouraging to see there is an effort within the Society to develop expertise, and while it is true that we need to identify the expertise that is unique to range management, I cannot agree with Dr. Hedrick that the uniqueness of range management is limited to “the ability of using animals as a tool in modifying natural environments.” Nor do I think this identity will help our professional development. Doctors are not professionals because they happen to specialize in obstetrics or pediatrics. Neither are dentists professionals because they use drills. To say we, as range managers, are professional because we specialize in ecosystems where the primary emphasis is on herbivores, or to say our uniqueness comes from the fact that we use animals as a tool in resource management, is too restrictive a view of range management. (I personally prefer the terminology “range science” over “range management” but the discussion of this controversial subject will have to wait until another time.)

I am troubled by the public and even our colleagues’ limited knowledge of the range manager’s scope of activities. I am even more troubled when, within our own discipline, we build a fence (as Dr. Hedrick does) around one phase of range management and try to stay within it. In addition to being knowledgeable about the role of domestic livestock and wildlife in altering natural environments, we need to be knowledgeable about, and actively involved in, other aspects of the management of range lands such as (but not limited to) watershed (with its attendant problems of water production and pollution), recreation, conservation, natural beauty and “people problems.”

Range management, like forestry, came into being as a protector of our natural resources. Range management was cast in the heroic role of the savior of our natural resources, not a manager of resources. Much of the vitality of range management stemmed from being identified with the conservation crusade. Most range positions are still identified as “range conservationist” positions. However, we now tend to be closely tied to animal production in the domestic livestock industry. The public doesn’t regard livestock production in the same light as it did protection. The public we are dealing with is more urban oriented than the public we dealt with in the days of the great conservation crusade. The public today is worried about natural beauty, stream pollution, and the price of food. They have little direct concern for the costs of livestock production (California Cattlemen’s Assoc. “Hot Irons” June 3, 1968), the plight of the livestock operator or the lack of professionalism in range management. To quote Charles Connaughton (J. Forestry 65(12):876. 1967), our problem is that we are not “in tune with the times.” The blame for lack of professional status is not the fault of the public. The blame can be placed squarely on the shoulders of range management for not keeping current in our ideas.

Until we realize that range management includes a broad cross section of resource and “people” problems, we do not stand to advance in professional stature. To quote Steve Spurr (J. Forestry, 66(1):26. 1968) “what sets the professional apart in our field is his overall education and training which hopefully give him a broad base of knowledge upon which to build his practice, and an understanding of creative processes that permits him to tackle new problems that constantly beset him.” It is not the ability to use the animal that sets range management apart. If this were the case, there would be no difference between a professional range manager and technicians and sub-professionals or husbandmen.

What sets the range manager apart is the particular set of “concepts” which, taken together, are the essential content of range management (Bentley,
A concept is an idea, a generalized abstraction. For example, competition is an abstraction which, with minor variations, is useful in understanding and predicting the ecological dynamics of all biota, including man in his social interactions.

Equilibrium, climax, succession, primary production, optimum yield, to name a few, are concepts which are encompassed by range management. There is considerable overlap with other disciplines in the use of these concepts, but this overlap is not a deterrent to range management being a profession. Physiologists and doctors both study the same organism (namely people), there is some overlap in concepts in their training and in the practice of their professions. What sets them apart is the particular set of concepts with which they are identified. It is this particular set of concepts (a demonstrated area of expertise) that should set range managers apart. Range management involves more than the one concept of using animals as a tool (Heady, J. Range Manage. 20(5): 283. 1967).

To answer Dr. Hedrick, I don't think we have "given ground in a field where our expertise is the strongest because we have stressed basic understanding." We unquestionably still have the best qualified group to conserve or preserve the range lands. But this is not the expertise needed. To answer Dr. Hedrick's question "how can we regain and maintain a stronger hand in the management area?" I would answer we never have had a strong hand in the management area. Range managers have traditionally been conservationists, not managers. We have often alluded to the fact that economics was important, but only recently have we begun to implement the serious economic study of range problems.

To say that "in no sense are we detracting from the value of physiology, ecology, nutrition, economics, etc." is misleading. Dr. Hedrick implies they are less important to the profession than "using the animal as a tool." To say "we're merely hanging our hat on a peg with a minimum of overlap and confusion" is also misleading. As I have stated previously, there is nothing wrong with the overlap of concepts. Viewing disciplines in this manner would get away from speaking about wildlife biologists (as Dr. Hedrick does) or other disciplines in derogatory fashion and help remove the misunderstandings among range managers about wildlife habitat management. Some range managers are managers of wildlife habitat and rightfully so. Wildlifers have a set of concepts which overlap with those of range management. But taken as a whole, it is a different set of concepts than that set unique to range management.

To summarize, range management is more than managing animals. It is a particular group of concepts encompassing many aspects of the biological and social sciences. It is this particular group of concepts that sets range management apart. However, because of the overlap of concepts with other disciplines, our only lasting salvation is to demonstrate better performance within the area encompassed by the particular set of concepts and not just within the concept of using animals as tools. By demonstrating better performance, we can better meet the challenges outlined in our Journal by Cook (20(4):277–278. 1967) and Woolfolk (21(3):185. 1968) among which are lack of public image, encroachment by other disciplines, and a failure to have range management accepted abroad.

To sell the uniqueness of range management, two tasks remain before us: (1) to identify the area of expertise (the concepts which are encompassed by range management); and (2) to demonstrate our expertise through performance.—Jack F. Hopper, Department of Range Science, Utah State University, Logan.

BOOK REVIEWS

Undergraduate Education in the Biological Sciences for Students in Agriculture and Natural Resources. Proceedings of a Conference by Commission on Education in Agriculture and Natural Resources. National Academy of Sciences Publication 1495 (Washington, D.C.), 86 p. 1967. $3.00.

The proceedings contain presentations made at the November 11-12, 1966, conference on undergraduate education in the biological sciences for students in agriculture and natural resources. The conference brought together 167 educators from U.S. colleges, universities, and organizations relating to the work of: (1) Commission on Education in Agriculture and Natural Resources (CEANAR); (2) Commission on Undergraduate Education in the Biological Sciences (CUEBS); (3) CUEBS' Panel on Preprofessional Training in the Agricultural Sciences (PPTAS), and (4) seven action committees jointly appointed by CEANAR and CUEBS representing major disciplines or programs in agriculture.

Dean Glenn S. Pound's keynote address on trends in agriculture suggested general directions which course content and curricula might take as a result of changes in agriculture. These changes require considerable reorientation of vocational agricultural education in high schools. And for college staffs he advised, "We in agriculture must show students that we can give them as strong an interdisciplinary background in biology as can the colleges of letters and sciences. But we cannot do this if we maintain separate majors in agronomy and horticulture or in poultry science and animal science." Dean Pound favored a core curriculum in biological sciences at the undergraduate level for students in agriculture, but questioned the desirability of a "core faculty" in basic biology.

Dean J. H. Meyer's paper, "Will There be a Second Era?," dealt with changes in agricultural education and research during the past 100 years. He made a case for greater emphasis on basic research and for freedom of the scientist to choose his program. He concluded: "We should be attempting, unhampered by past constraints, to find the form our teaching and research should take so they can best serve