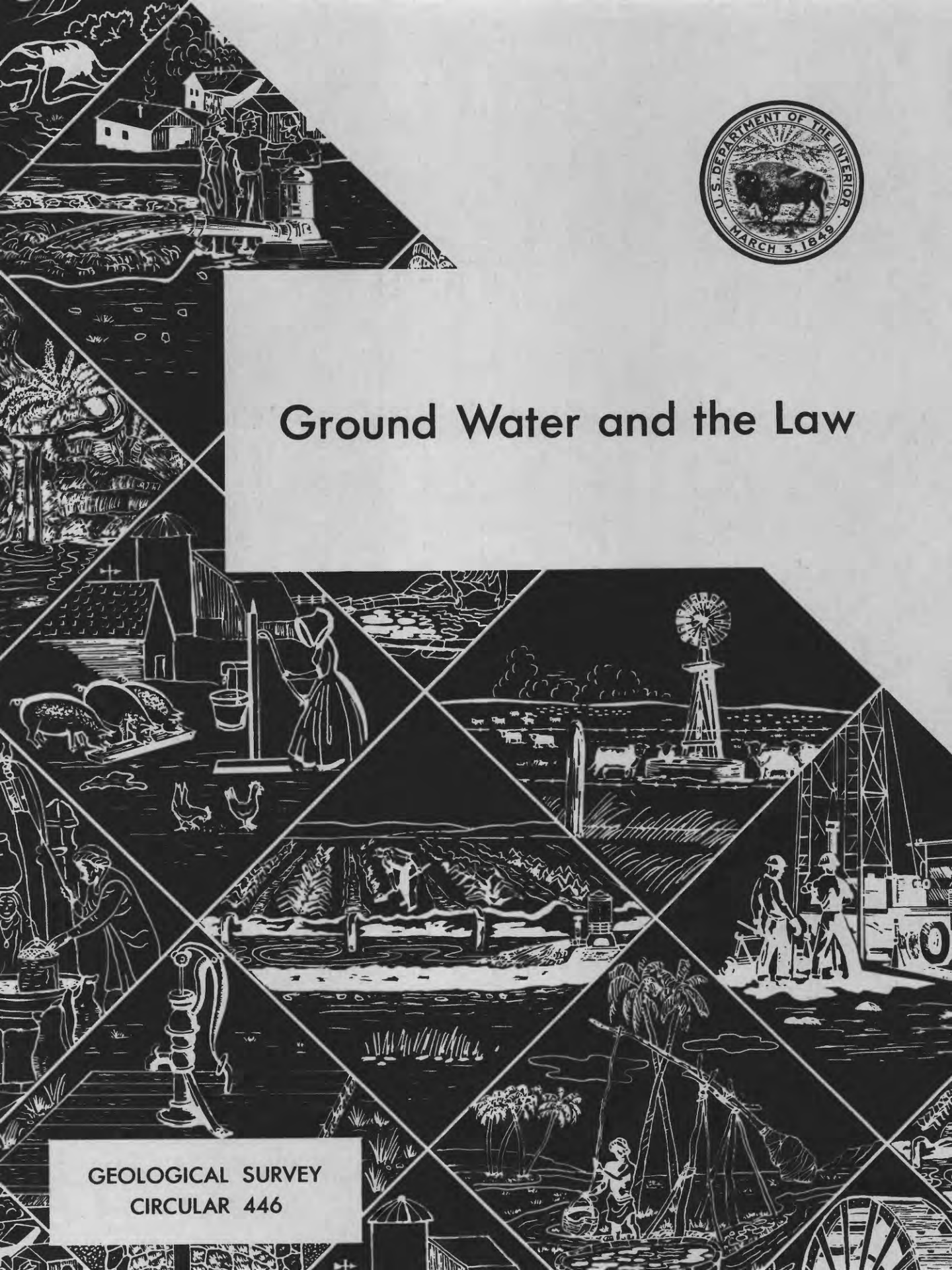

Ground Water and the Law

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By H. E. Thomas

Adapted from an address presented at the Fourth Annual Water Resources Conference in Butte, Mont., July 31, 1959.

My subject tonight—ground water and the law—places in juxtaposition the physical aspects of a vital natural resource and the human relations to that resource. During the conference today we have already heard from scientists and engineers concerning the physical aspects of the resource and its development, and from lawyers and economists concerning the human aspects. The water user is necessarily interested both in the physical aspects of ground water—including the location, quantity, and quality of it—and in his right to the use of that water. However, he is likely to be very little concerned with water rights unless or until the physical resource becomes insufficient to supply the needs or wants of all who depend upon that resource. Water rights become a major concern in time or places of water shortage.

During a recent conference at the University of Colorado one of the speakers remarked that no State has more chaotic ground-water rights than Colorado, unless it be Montana. But I heard today, during the discussion of Mr. Coldiron's paper, that no disagreement between ground-water users or well owners has yet reached the courts in Montana. Thus, if your water rights are not clearly defined in Montana, it is at least partly because you haven't yet had the water shortages that give rise to major disputes over rights.

Among neighbors, when one is short of anything, it is common practice to borrow from another; and this practice has been extended by the legal profession to the point where, if you haven't enough troubles of your own, you borrow some from your neighbors. When you develop controversies over water rights you can be assured that arguments on both sides, and therefore the decisions, will be based in part on what has been done in other States. Thus for ideas as to patterns of water rights that might eventually be accepted in Montana, we may summarize briefly the types of water rights recognized or claimed in other States.

TYPES OF WATER RIGHTS

There is no possibility of covering adequately the subject of water rights in a few minutes; great volumes have been written on the subject, and more is being added with every court decision, statute, compact, or treaty pertaining to water. Several base or doctrine rights have been mentioned during the meeting today, and even a list of these doctrines is fairly long. Some doctrines have been named after the places whence they originated: English, American, Colorado, California; some are named for significant features embraced by the doctrine: reasonable use, beneficial use, correlative use, prescription or adverse use, mutual prescription, appropriation. And with the development and application of these doctrines have come a large number of definitions and classifications of various aspects of water rights.

A water right is universally defined as real property entitled to the same protection as any real estate, including the constitutional guarantee that no one shall be deprived of his property without due process of law. As we shall see, this definition leads to some complications, because real property is generally fixed and immovable whereas water is characteristically in motion, although in some places that movement may be so slow that it is not readily recognized.

As a hydrologist who had not penetrated far into the forest of details concerning water rights, I realize that some of my attempts at generalization might not be acceptable in a court of law. It is with this reservation, then,

that I propose to divide all rights to all water into two broad groups: rights based upon ownership of land, and rights based upon actual use of water.

Rights based upon ownership of land include riparian rights of land bordering streams or lakes, and equivalent rights to springs or to water wells that are located upon the landowner's property. The water right is appurtenant to the land and exists whether the landowner uses the water or not; thus he is entitled to water whenever he chooses to use it. As the riparian doctrine was originally conceived, no limitation was placed upon the quantity that could be used, other than the capabilities of the stream, spring, or well. As might be expected, this doctrine of water rights developed at places where, and in times when, water supplies were more than enough to meet the requirements of the people - it developed chiefly in England[1,2,3] and the humid regions of the Eastern United States[4] and it and its variations constitute the *common-law doctrines*. As water requirements increased, or as the common-law doctrines were applied to regions of less abundant water supply, various restrictions were developed, as for example that water rights must be based upon *reasonable use*,[5] or that they are *correlative* with ownership of land.[6]

Water rights based upon actual use of the water are principally those developed under the doctrine of *appropriation*, which is widely accepted in the Western United States. By this doctrine, the first in time of beneficial use is the first in right, and the right is maintained only by use. This type of right generally requires a repudiation of the common-law doctrine of private ownership of the water by a statutory declaration that the water belongs to the public, or to the State. In some States where water rights are based on landownership, the development and use of water in critical areas are regulated by a permit system which is similar in many respects to the appropriation system. Also, under the common-law doctrines it is possible to obtain a water right by actual use of water "openly, notoriously, and adversely" to the interests of the man who owns the land—that is, by *prescription*. Generally the water-right systems based on actual use of water are characteristic of regions of water scarcity, including notably the arid Western States, whereas the water-right systems based upon landownership are favored in regions of water abundance, including the humid Eastern States. Neither system is entirely satisfactory. In the humid regions there is increasing urge to give more emphasis to actual use of water as a basis of a water right, in order to protect the investments of those who have actually developed and are using the water resources. In fact, many people in the East regard enviously the appropriation system that has been developed in the Western States.

On the other hand, in the States that have accepted actual use of water as the dominant basis of a water right, there is increasing evidence that rights based on landownership are not absolutely abolished. In Utah, which in 1935 declared "all" water to be public property and subject to appropriation, the State Supreme Court in 1949 declared that a landowner had a right to water that cannot be determined to be a part of a stream or of a ground-water body.[7] Similarly in New Mexico, which for at least three decades has accepted appropriation as the exclusive method of obtaining ground water or surface water, the State Supreme Court in a recent decision declared that the city of Las Vegas has ancient pueblo rights which include the water needed for the city's future growth.[8] Las Vegas has not grown very much, but other cities in New Mexico, including Albuquerque, also may have pueblo rights, and they have grown tremendously in recent years. By the State Supreme Court decision, a city that can claim an ancient pueblo grant has water rights superior to those of people who have already appropriated and used water. In several Western States, the water rights of Indians on reservations pose a knotty problem wherever there is outflow from the reservation which has been developed and used by others in accordance with the appropriation doctrine. If water rights are based exclusively upon appropriation, Indians as wards of the Federal Government could not acquire rights to water except by favorable and timely congressional action, even though the lands of the reservation have been granted to them in perpetuity.

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[1] Mason v. Hill, 5 Barn. Adol. 1, 110 Eng. Reprint 692 (1833).
[2] Wood v. Waud, 3 Exch. (England) 748 (1849).
[3] Acton v. Blundell, 12 M. W. 324 (1843).
[4] Tyler v. Wilkinson, 4 Mason 397 (1827).
[5] Bassett v. Salisbury Mfg. Co., 43 N. H. 569, 82 Am. Dec. 179 (1862).
[6] Katz v. Walkinshaw, 141 Calif. 116, 74 P. 766 (1903).
[7] Riordan v. Westwood, 203 P. (2d) 922 (1949).
[8] Cartwright et al. v. Public Service Co. of N. Mex., (1958)—not yet reported.

In controversies over allocation of water within major river basins, the ownership of land is commonly considered a significant factor. Today there have been references to "Montana's water" which is flowing unused into other States. Similarly, other Western States which recognize water rights on the basis of appropriation lay claims to unappropriated water on the basis of ownership of the land whence that water flows. The Federal Government has similarly pointed out that there has never been any intention of relinquishment of rights to water on permanently reserved lands such as Indian reservations and national parks, monuments, and forests, and the U.S. Supreme Court recently confirmed the Federal right to water based on ownership of those lands.[9] In States where appropriation had long been specified as the exclusive method of obtaining a water right, the declaration of Federal rights based on landownership has been unsettling, to say the least.

HISTORY OF WATER RIGHTS

The histories of our present doctrines of water rights have been traced back by several scholars to England, to Mexico and thence to Spain, to France and the Napoleonic code, and even to ancient Rome. The earliest court decisions now quoted concerning water rights, however, were announced little more than a century ago. Human nature being what it is, it is unlikely that those were the first disputes ever to have occurred over water. Nevertheless, the paucity of record concerning water rights may indicate that for many centuries of human history the population was small enough, the requirements for water low enough, and the supply of water great enough that water rights were a very minor problem. However, since water rights are defined as real property rights, and since our ancestors did and said a good deal about property rights, we can draw some inferences as to what they would have said and done about water rights had the problem come up.

The right to use of water on the basis of landownership is a corollary of the right of an individual to own land, including the right to do as he pleases with the land and upon his death to pass his estate to others in accordance with his will. This is a right that we take for granted now, and perhaps deprecatingly because it includes the privilege of paying taxes. But it is a right that does not exist in many parts of the world today, and it was won for us by our ancestors only after a long struggle. Within the past millennium we have recorded the change from absolute ownership by a king of all the land and chattels, even including the people, within his kingdom. Doubtless most of our ancestors were the other people, rather than the kings, so that our lot has been improved over the centuries, starting with the Magna Carta and reaching a high level with the framing of the U.S. Constitution. In the first century of our country's history, when there was a relatively small population and a large land area, the landowner could do just about as he pleased with his property, and the term land "lord" indicated a person having rights almost on a par with the ancient absolute monarchs. With the increasing population of recent decades, the landlord has been made increasingly aware of his responsibility to society, his freedom of action has become more restricted, and today he is likely to be as harried an individual as a schoolteacher—or a government worker. Restrictive regulations concerning landownership have a parallel in the restrictive measures relating to water rights based on landownership, and are similarly a product of increasing pressure of the population.

Acquiring property by individual effort is also an ancient and well-recognized custom, honored for example in the parable of the talents.[10] This method has long been recognized as a legel basis for acquiring property, whether by grant from a grateful landowner for services rendered, or by prescription from a landowner who was not strong enough or wise enough to protect his own property. The homestead laws encouraged the settling of the West by awards of property to those who made the necessary effort. Rights to land thus acquired have a parallel in the water rights developed on the basis of appropriation. Pursuing the parallel a step further, we may ask whether the appropriation system may be similarly only a phase in the Nation's history, especially adapted to encouraging habitation in a vast unoccupied public domain but of dwindling importance as the occupancy of the land approaches the ultimate. In the West today, for water as well as for land, we find less and less of the "virgin" resources untouched by

[9] Federal Power Comm. v. Oregon, 349 U.S. 435 (1955).

[10] Matthew 25: 14-30.

human hand. Eventually we shall run out of unappropriated water, and in the arid West there is no question that this will occur before we run out of unappropriated land. Water for new uses and new users in the future, therefore, must come increasingly from sources in which rights have already been established. Thus comes the realization that valid water rights have value, and cannot be taken without just compensation. Montana is in a more fortunate position than most of the Western States, because there is still water unused and available for appropriation in several parts of the State. As long as these undeveloped sources remain, one can still develop a water right at essentially the cost of the storage facilities, wells, and pumps that are needed. Water users everywhere have these costs, but in many places they must also purchase the right to use water. It may be many years in the future, but Montana's water resources may similarly be entirely appropriated eventually, and then anyone desiring to use water must bargain with someone who owns a water right.

INSECURITY OF EXISTING WATER RIGHTS

The principal value of a water right is its assurance of water supply at all times, including periods of drought or of water shortage from any other cause. Thus it should provide insurance for investments not only in the water-development facilities but in the agricultural, industrial, or urban enterprises that depend upon that water. Unfortunately, in many instances, existing water rights do not provide this security.

Insecurity of water rights may result in part from uncertainty as to the fundamental basis of water rights—whether by actual use of the water or as appurtenant to the land—but even where the basis of water rights has been rather clearly stated in laws or construed in court decisions, insecurity may persist. Some insecurity is doubtless inevitable because of man's inability to overcome the natural fluctuations in supply; some insecurity results also from conflicts between the science of water (hydrology) and the popular concepts concerning water as developed in legal instruments defining water rights.

Obviously it is difficult to adapt our great body of law concerning real property—which is solid and generally quite immovable—to water, which is fluid and mobile. In the hydrologic cycle, which depicts the prevailing circulation of water over, upon, and beneath the land surface, only one phase—soil moisture—can be truly adapted to our prevailing concepts of land and its ownership. In other phases of the cycle, water may cross property lines as overland runoff upon the land surface, as streamflow in watercourses, or as ground water beneath the land surface. And if the water crosses established property lines, a landowner cannot help affecting the water supplies of his neighbors when he develops and uses that water within his own property, nor can he help being affected by the actions of his neighbors when they withdraw water within their property lines. If the quantity of water withdrawn is small, the effect at some distance may be negligible; and if the distance is great, the effect even of large withdrawals may be long delayed. It is obvious that, if the water resources of neighboring lands are interrelated, there must be some insecurity in investments that depend upon water withdrawn at any specific parcel of land, because of the possibility that withdrawal of water on other parcels will affect the supply.

Whenever rain falls or snow melts upon the land to produce soil moisture, that water is universally accorded to the landowner—it is his to use by cropping, to save by fallowing for future use, or to ignore. And a question naturally arises: Could not he be assured of a little more—perhaps the small springs or seeps that rise on his property, or the ground water that is encountered in wells? The desire for an affirmative answer to this question, the prevailing ignorance about ground water—where it comes from, where it goes, and whether it comes or goes—plus our past experience with small widely spaced wells, all have encouraged the hope that landowners could develop and use water independently and without affecting their neighbors' supplies. Such could be the basis for classifying most ground water as "percolating" water, not flowing in a "defined" stream and sufficiently unknown that its place in the hydrologic cycle is not established. This legal distinction has no scientific basis, however, and with large-scale ground-water development the rules for "percolating" water become figments.

Water rights based upon actual use of water generally provide greater security in investments for water development and use than

water rights based upon landownership. Indeed, the "permanence" of a right based upon appropriation has been criticized by many on the ground that it makes for inflexibility in place and amount and purpose of use, and thus may prevent optimum use of the water resources as the requirements of society change. Nevertheless, appropriate rights may be insecure because of conflicts between hydrology and public attitudes as reflected in present concepts concerning those rights. I refer to the popular concepts (1) that ground water and surface water are separate resources, and (2) that ground water is a replenishable resource.

As you know, the central theme in appropriative rights is "first in time of beneficial use is first in right." In Montana, as in other Western States, the oldest established rights are commonly those for surface water, and the "primary" rights among these are to the quantity which constitutes the historic minimum flow of the stream, because these rights can be satisfied at all times under natural conditions. But this minimum flow is likely to consist chiefly if not entirely of outflow from ground-water reservoirs. Development that reduces the natural outflow from these reservoirs may thus render insecure the oldest and theoretically the best rights in the drainage basin. If the relations between surface water and ground water are not adequately known, or if ground-water and surface-water rights are developed, administered, and regulated independently, there is cause for concern among those who have long made beneficial use of the water.

Fresh water is almost universally classed among the renewable resources, and this is a good bird's-eye view. As seen from the clouds, there is precipitation upon the land surface, and this replenishes (1) the soil moisture, (2) the rivers and lakes that have been depleted by evaporation or flow to the sea, and (3) the ground-water reservoirs that are continually spilling over in springs and seeps and contributing to perennial streams. But now let's take a worm's-eye view, and consider the situation from the aspect of the ground-water reservoirs. These reservoirs in the United States contain something like a few hundred billion acre-feet of fresh water within half a mile of the land surface. If these reservoirs could be drained completely, they could not be renewed in our lifetime, because the total precipitation upon the country averages only about 5 billion acre-feet a year, and only a fraction of that would enter the ground-water reservoirs. In other words, the bulk of our accumulated ground-water resource is *not* replenishable. The renewable part is not the accumulated resource, but only the overflow from full reservoirs.

Under the appropriation doctrine water is presumed to be a replenishable resource, and the appropriative right has been defined as the right to use a specified rate of flow "annually and forever." As to surface water, the total use cannot exceed the quantity that is available in the stream, and that quantity is replenishable. But ground water is under no such limitation, because of the vast quantity accumulated in aquifers. Thus it is possible to pump much more ground water than can be replenished, and we are doing so in many places, particularly in the southwestern States. Obviously pumping at such rates cannot continue "annually and forever," and the definition of appropriative ground-water rights must be modified accordingly. This has been done in New Mexico, for instance, where ground-water rights are based upon appropriation: In several parts of the State, the amount of ground-water replenishment each year is negligible in comparison to the accumulated water in storage, and is considerably less than the current rate of pumping; the State's regulation of ground-water development is planned so that the resource will constitute a productive economic resource for at least 40 years, which is a long time but far less than "forever."

In several States court decisions have enjoined the lowering, by pumping, of the water table or artesian pressure below a specified level; this is in accord with widespread popular demand that underground storage be maintained at constant volume, and in any event not be decreased below a certain specified minimum. This concept too can lead to insecurity of water rights, because the natural inflow to most reservoirs varies greatly from year to year, reflecting variations in precipitation. The amount of ground water in storage can be held constant only by increasing pumping in years of abundant precipitation, and reducing pumping in years of drought when the need for water is greatest.

The problem can be more easily seen by analogy with surface water, because we generally can "see" and understand surface water

better than ground water. Take an unregulated stream that has a median flow of 100 cfs (cubic feet per second), and a recorded range of from 5 cfs to 2,000 cfs in the past 50 years. The rights to the first 5 cfs would be quite secure, because they could be satisfied at all times, but from there on each successively lower priority of right would be increasingly insecure, and the rights to water in excess of the average flow of the stream could be satisfied only occasionally. With storage provided by reservoirs on the same stream, the secure water rights could approach much more nearly the median flow of the stream, though at the expense of some floodwater rights. The analogy with ground water is that the ground-water reservoir does provide the storage, and can provide security in rights to water in quantities approaching the average annual inflow (the "safe yield" or perennial yield). Artificial maintenance of a constant level of storage in a ground-water reservoir—as in a surface reservoir—would prevent operation to overcome the natural variations in inflow, and would instead create a group of ground-water rights as insecure as floodwater rights on an unregulated stream.

WATER LAW AS AN AID TO OPTIMUM USE

These few examples are probably enough to indicate that there are many problems connected with water rights, and some of these problems can be traced to conflicts between the scientific and popular concepts of the occurrence and movement of water. Repeating my earlier remark that water rights become of increasing concern as water becomes a scarce commodity, you may now be relieved that Montana has had so few controversies over ground-water rights. All of us know of some fields in which we would prefer not to keep up with our neighbors, as for example overeating or going into debt. One might even ask whether the best policy would be to wait until there is a real need for law, on the ground that the American way is to encourage development by private initiative, and pass laws only to curb that initiative when necessary. Here the answer is that an effective system of water rights is needed to provide security for the investment necessary for development and beneficial use of water. Besides, laws need not necessarily be restrictive. Permissive legislation can encourage organization of public districts or water-service utilities having the common interest of economical and effective development and use of water within a specified area. Laws based upon recognition of the potentialities as well as the limitations of the water resource can accentuate the positive, rather than hamper development.

Throughout the country there are two fundamental bases for water rights: one as property appurtenant to the land, whose owner thus has the right to use water when, as, and if he chooses; the other developed by actual use of the water and not necessarily related to landownership. Both concepts are deeply ingrained in our minds as basic in property rights. Although the actual use of water is the preferred basis of right in areas of water scarcity, every State appears to accept both bases for water rights to some extent, and many conflicts of interest have resulted. In framing legislation or deciding water controversies, the best that can be hoped for is probably to avoid glaring inconsistencies, particularly with respect to attempts to define different "classes" of water which have no basis in fact.

The interrelation of water in the several phases of the hydrologic cycle is well established as a general principle, whether or not there is adequate evidence as to the degree of relation in specific areas. Separate and independent administration, control, or evaluation of surface and ground water is therefore likely to be ineffective. In all aspects of the water resources and their utilization, we can expect change: geographic variations, variations in natural hydrologic characteristics, variations from time to time in the natural supply and replenishment, and variations from time to time in man's requirements as to quantity and quality of water and type of use. For an area so large and diverse as the State of Montana (or even Rhode Island, for that matter) water laws must be flexible enough to be adaptable to these changing conditions. One method of achieving flexibility with safety is to enunciate only the basic principles in statutes, to confer broad powers upon the administrator responsible for working out detailed solutions to specific problems, and to provide for prompt and effective action by the courts on appeals from the administrators' decisions.

Finally, adequate hydrologic data are prerequisite to the regulation and control of development, the evaluation of water rights, and the assessment of the quantities and qualities of available water within each hydrologic unit. Such data are of inestimable value in preliminary consideration of the needs for legislation, and there is continuing need for more and more data throughout the process of achieving optimum use of the water resources, of which ground water is a fundamental part.