

Brush Invasion—1500 B.C. and 1950 A.D.

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It is said that "History repeats itself." The Bible gives evidence of brush invading the Biblical lands as early as 1500 B.C. Before my eyes, 3,450 years later, I was amazed at the brush invasion in the southwestern United States.

As I traveled through Texas, New Mexico, Utah, Arizona and California, I saw millions of acres where brush was now dominant, but which once were vast areas of rich grasslands. The invasion was so complete in places, such as in south Texas, that woody species formed almost impenetrable thickets. Early American pioneers once described the same area as a "sea of grass."

The invasion has occurred so recently that there are still people alive that remember the open grassy plains.

Records and writings give fairly accurate accounts of the change.

What has happened and is happening in the Southwest is exactly what *could* have, and probably *did* happen in the Biblical lands. The Old Testament gives only hints, or scraps of information, but the story, pieced together, is there.

Abraham was a stockman. He left his home in the irrigated valley of the Tigris and Euphrates, and went westward looking for greener pastures.

The country of Canaan looked good—not yet thickly populated, only two sizable towns—Sichem and Hebron, and the rest must have been grass—otherwise why settle there? Grass was what he was seeking.

The tillers of the soil who lived in those towns were friendly towards the stockman. After all, they had not much use for all the grass around. But trouble soon started. With Abraham was his nephew, Lot. He, too, had flocks, and it soon became apparent that there was not

enough feed for both of them (*Gen. 13*). This must be the first historical record of overgrazing.

So Lot chose to leave the high country near Hebron and went to graze in the rich, watered valley of the Jordan River. But he was a late arrival there—the valley was already densely populated, with



FIGURE 1. A South Texas brush-invaded range cleared of brush by root-plowing during the previous year is inspected by the author, Yaaqov Orev, while on assignment in the U. S.

many towns—and Lot became involved in a fight and was taken prisoner. Abraham came to his rescue with his armed herders—318 in all (*Gen. 14*). Quite an outfit!

At that time the mountains and slopes were treeless. Evidence of this lies in the fact that when Abraham went to obey God's command to sacrifice his only son on a mountain, he took the necessary firewood with him—he knew he would not find it on the spot. But when the whole affair ended happily with God's angel stopping him and obligingly providing a stag entangled in the brush, there is an apparent

contradiction, until we notice that there is an abrupt change in style¹ at the end of the story which, the Bible scholars tell us, belongs to a much later age. Does that mean that grass was dominant when the beginning of the story was written, and brush when the second part was put down? Perhaps. (*Gen. 32*.) Certain it is that nature attempts to cover its wounds and, when man's livestock graze off the grass, weeds, which may be woody plants, invade.

Livestock operators in early Biblical times must have had large herds. For example we have some

indications of the size of Jacob's operation. He offered to Esau, as a token of conciliation, the following:

Goats	20	Camels	30
Bucks	20	Cows	40
Ewes	200	Bulls	10
Rams	20	Asses	20
		Donkey Colts	10

Allowing that the animals then were smaller than now, it would amount to approximately 150 AU. It is logical to assume that it was 1. *The change consists of the use of the word "Jehovah," which is late, for the ending of the story, opposed to "Elohim," which is early, in the beginning.*

one-tenth of what he had. Therefore, if he started with 1,500—150 = 1,350 AU, we can safely assume a crop of 50 percent and 20 percent annual increase in size of flocks. That would mean that in 10 years his flocks and herds would number approximately 6,000 AU. And he was neither the first nor the only operator in that area of 3,000 square miles.

About 300 years after Abraham came to the land of Canaan, Jacob and his tribe were stricken by a prolonged drought. Their herds must have denuded the grazing lands. They had to seek refuge in Egypt. After 400 years of slavery, their descendants returned to Canaan. It was already densely populated, and brush was abundant—scrub oaks and pistacias. Tillers of the soil did not bother much about it—after all, they needed firewood and fiber. But it had its disadvantages—wild beasts lurked in the brush. Samson (*ca.* 1200 B.C.) had to fight a lion (which would point to a savannah type) and outlaws like Iftah and David found it easy to hide.

Sometimes, though, it profited the established authority—as when Absalom's hair got caught by a pistacia, where Jacob found and killed him (*ca.* 250 B.C.) (*Sam. II, Chap. 17*).

Even the drier parts of the country became wooded. Ezekiel (*ca.* 550 B.C.) speaks about the "forest of the Negev" (*Chap. 21*). In reality it was an Acacia scrub, and scattered Acacias are still found in that area which has 8 to 10 inches of winter rainfall.

All memory of the country once having had a grass cover was lost; today all authorities assume that the climax vegetation was oak-pistacia or Aleppo pine forest, as it appeared about 1000 B.C.

The same story was repeated all around the Mediterranean. We know of repeated incursions and invasions of nomad horsemen into Mediterranean countries. The horsemen needed grass. It is hard to imagine that they would have been attracted by thick, impenetrable

"Maquis." A stockman's psychology changes little.

The first written documents we have, and the earliest literature, speak of Greece and Italy as being forested, and grazed mainly with sheep and goats; their decline being attributed to soil erosion caused by destruction of forest cover.

But the earliest written records date from approximately 1000 B.C. What about all the grazing in the Bronze Age? Can even the lightest grazing be discounted? And knowing what we know now, we may be sure that *any* grazing on natural range in the past was *overgrazing*.

Can the vegetation of the Mediterranean littoral at about 1000 B.C. be accepted as climax? Was the forest a result of grazing? Or was the so-called "forest" only scrubby woody species that invaded denuded grassland?

When I compare these two areas of the world, so distant and different, yet apparently so similar in their cause-effect relationship, several thoughts emerge.

Nature's laws do not change. There is no "unique" brush invasion in the Southwest. Similar invasions have occurred or are happening all over the world.

What happened is exactly what happens when Nature's balance is disturbed. A piece of virgin sod is broken out for cultivation, or the thick cover of grass is destroyed by grazing and drought. Almost miraculously, weeds appear.

Where did the weeds come from? In most cases, the weedy species occurred as a minor and insignificant part of the climax, or original vegetation. Perhaps they were found around animal or insect burrows, or other such disturbed spots. Seldom was the seed actually introduced from distant areas, true "invaders."

Certain of these minor plants, particularly those not grazed, found the disturbed soil to their liking. They multiplied manifold, and spread. In some cases, cultivated fields had to be abandoned. Likewise, poisonous invaders have

made rangeland almost useless, and woody species made grasslands unproductive of palatable forage.

One Texan was heard to say, while looking at a vast expanse of "chaparral," or thorny brush, "My grandfather must have been a hot-headed fool to have fought the Mexicans for this!" Yet his grandfather was fighting for, and won, rich grasslands.

These worthless plants, mesquite, juniper, burroweed, etc., aren't the real "invaders." They were there, even though in minor quantities. It is economic man that is the real *invader*. He disturbed the balance with his plow and his herds of livestock, the balance that Nature had built up for millions of years.

Research workers are looking for "the" factor responsible for brush invasion—overgrazing, drought, fire prevention, etc. It seems to me they are searching in vain. *All* the factors which contribute to economic use, taking something out and not returning anything, are responsible.

It may help to learn that the problem is not unique, and that it was inevitable. The early settlers grazed off the grass, and took no heed of the "weeds" as they appeared. Suddenly, the ranchers were confronted with the fact that the grass was gone; the weeds were there. Woody species are the most apparent weeds, though non-palatable, often poisonous herb species are also abundant. It did not take the Southwest long to realize the immensity of the problem. The realization was possible because the change occurred so rapidly.

It may be much more expensive to fight the weeds now, than it would have been to control them when they started.

There is no more Western frontier to be settled—the ranchers can't move on and leave the abused, weed-infested rangeland. The rancher has to hold on to what he has, and now pay for what his ancestors did, or did not do, to the land. It has to be done in the Old World. Now the same is having to be done in the New World.