FIVE varieties of alfalfa have been registered prior to this report, as follows: Ranger, Buffalo, and Meeker Baltic (6); Narragansett (4); and Vernal (5).

Atlantic (Reg. No. 6)

Atlantic alfalfa is the product of a program of maternal line selection carried out at the New Jersey Agricultural Experiment Station by Howard B. Sprague. The variety was released for seed increase in 1940.

More than 100 alfalfa strains from Asia and North America were used in its development. These strains were selected and intercrossed over a period of fifteen years (3). They included Hairy Peruvian, Highland Utah, Grimm, Cossack, Hardigan, LeBeau, Canadian Variegated, Kansas Common, Montana Common, Ladak, several strains from China, Turkey, and Iran, 12 miscellaneous strains of *Medicago sativa*, and 7 strains of *M. falcata* from Turkey. In the later stages of the breeding program, 25 F₂ progenies from bacterial wilt resistant hybrids were also used.

In 1937, three synthetic varieties were constituted from this material. They were tested in comparison with 95 other strains and varieties, in experiments located in 29 states and 1 Canadian province. Summarization of forage yields over a period of 3 years showed that the 3 synthetics (A65, A66 and A67) ranked first, second, and third in productivity among all strains (11). Seed of the three synthetic varieties was mixed in equal quantities to form Atlantic.

Genetic stocks of the variety have since been maintained, and breeder seed produced, at the New Jersey Agricultural Experiment Station. The original breeder seed field was retained from 1940 through 1951. Its successor was planted in 1951, using stored seed of the same material that had been used for the 1940 planting. Thus all breeder seed produced to date has been of the first generation beyond the A65, A66, and A67 synthetics. The increase of Atlantic has been under the direction of the National Foundation Seed Project since 1949. Current production of certified seed is in excess of four million pounds annually.

Repeated tests of Atlantic alfalfa during many years and at many locations have shown that it gives high yields over a wide area. Data for the period 1943–1950 showed that it outyielded Ranger, Buffalo, Kansas Common, and Grimm by 10% or more throughout most of the northeastern United States (2). The area of best adaptation of Atlantic is considered to extend from southern Maine to North Carolina, and west to the Mississippi River. It has also yielded well in Texas, Wyoming, Colorado, Utah, Idaho, and Washington.

Atlantic is not resistant to the bacterial wilt organism, but is somewhat tolerant (1). Several of the original strains used in developing the variety carried genes for resistance, and some had been specifically selected for this character. Wilt symptoms in Atlantic tend to appear somewhat later and are less severe than in highly susceptible varieties.

Most of the flowers in Atlantic are light purple, but occasionally other colors and shades are found. The variety is extremely variable morphologically.

Application for registration was submitted, and information on the origin, history, and performance was provided by W. R. Battle.

Caliverde (Reg. No. 7)

Caliverde is a 5-clone synthetic, the 5 parent plants selected from Nemastan for their resistance to bacterial wilt and downy mildew. Its wilt resistance is equal to Ranger, insuring longer-lived stands in areas where wilt is a menace. Its resistance to leafspot and mildew provides earlier starting and higher yields of hay on early spring and late fall cuttings. Among the new varieties very similar to its recurrent parent, California Common, it is adapted to the same conditions and giving a similar response. It is slightly more winter dormant than the latter, starting a little more slowly in the spring and stopping growth a little earlier in the fall. It is generally adapted except in the extreme northeast portion, and in the Desert area of the state. Its flower color ranges from dark purple, with an occasional white-flowered plant. Yield data comparing Caliverde with California Common, the standard variety, are given in Table 1. In a measure of hay quality, conditions of heavy *Pseudopestis* leafspot infestation maintained 18.14% protein and 204 ppm carotene while California Common contained 12.9% protein and 96 ppm carotene. These differences are largely the result of defoliation due to *Pseudopestis*; the quality is the same in the absence of defoliation. Further information has been published (9).

Breeders seed of Caliverde is maintained by comparing amounts of seed produced in a polycross nursery consisting of the original parent clones. Certified seed production is estimated at 1,320,000 pounds.

Application for registration was submitted, and information on the origin, history, and performance was provided by Frank H. Fleischmann.

Lahontan (Reg. No. 8)

Lahontan was developed by O. F. Smith, Research Crops Research Division, ARS, USDA, in cooperation with the Nevada Agricultural Experiment Station, Max Fleischmann College of Agriculture. It was officially released for use by the Experiment Stations of Nevada and California in 1954.

Lahontan is a 5-clone synthetic, the 5 parent plants selected from Nemastan for their resistance to bacterial stem nematode. The new variety is resistant to both. In Nevada tests, it has been found to be practically immune to bacterial stem nematode. The relative level of resistance to bacterial stem nematode is shown in Table 2.

Lahontan is also highly resistant to the spotted aphid. More than two-thirds of the mature plants possess sufficient resistance to prevent a sustained build-up of alfalfa aphid. Defoliation of plants by the aphid does not occur in this variety as it does in susceptible varieties.

Yield results show Lahontan to be slightly better in forage production at Reno, Nevada, when the aphid and spotted alfalfa aphid are not factors (table 3). Lahontan is from a test in which stem nematode and bacterial stem nematode are present are given in table 4.

Lahontan is purple flowered. It has an upright growth habit and recovers quickly following cutting. In winter it is in about the same category as the variety Buffalo.

Table 1—Average annual hay yields of Caliverde and California Common in tons per acre at Davis and Shafter

<table>
<thead>
<tr>
<th>Variety</th>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Trial 3</th>
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<tbody>
<tr>
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<td>1951-54</td>
<td>1952-54</td>
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<tr>
<td>Caliverde</td>
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<tr>
<td>California Common</td>
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