The pluviculturists

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The Rainmakers: American "Pluviculture" to World War II. By Clark C. Spence. Pp.185 ISBN 0-8032-4117-8. (University of Nebraska Press: 1980.) $15.95, £9.60.

IN 1930, "Dr" George Ambrosius Immanuel Morrison Sykes was employed by the Westchester Racing Association to ensure sunny weather at Belmont Park racetrack in New York City. Although not a meteorologist, Sykes called himself a "meteorolurgist", that is, someone who can actually control the weather. Besides suppressing rainfall, Sykes' Weather Control Bureau also claimed to be able to prevent snow, hail, frost and hot weather. The Bureau could, on the other hand, generate rainfall if so desired. To perform these seemingly impossible feats, Sykes relied upon a bizarre assortment of equipment, ranging from a toy propeller to a tub of smelly chemicals. His efforts to guarantee sunshine at Belmont Park, needless to say, met with only mixed success.

Although the putative beginning of scientific weather modification dates from 1946, with Vincent Schaefer's successful seeding of clouds using dry ice, Clark Spence's entertaining book describes the largely forgotten history of earlier, less-scientific rainmaking attempts in America. David Jordan coined the term "pluviculture" to refer to the endless rainmaking schemes that were inevitably proposed upon the occurrence of drought. Most of these "pluviculturists" were not nearly as outlandish as "Dr" Sykes. They included James Espy, a true scientist, whose theories concerning a relationship between fire and rainfall were respected by the scientific community. The most popular rainmaker was probably Charles Hatfield (the "miracle man"), a former sewing machine salesman, who used the "smell maker" technique involving the release of chemicals into the atmosphere. Reputedly responsible for the great flood of 1916 in San Diego ("Hatfield's flood"), he has become a part of the folklore of southern California.

The recipe for success as a rainmaker was simple. Above all, it required being a convincing salesman to take advantage of the public's gullibility. When faced with drought, farmers were desperate and willing to try almost anything. This "drought psychology" made the "no rain, no pay" schemes offered by the rainmakers highly attractive. Aided by weather forecasts and information on local meteorological patterns, the pluviculturists depended on occasional coincidences with the occurrence of natural precipitation to demonstrate the viability of their rainmaking operations. Plausible excuses could always be dreamed up in case of failure. Sensationalized journalism helped too, publicizing apparent successes, while not bothering to mention failures. The scientific community, including the US Weather Bureau, remained steadfast in opposition to nearly every rainmaking scheme, but to no avail; scientific expertise was no match for expert salesmanship.

The rainmakers took advantage of several common fallacies, all somewhat statistical in nature. The *post hoc, ergo propter hoc* fallacy arose in connection with the coincidence between rainmaking operations and subsequent rainfall. Pluviculturists always took credit for any rainfall, even if it occurred several days after their operations or only at distant locations. Another fallacy concerned the often misused "law of averages". Rainmakers were well aware of the odds for rain, correctly realizing that it was sure to occur eventually. That the public was confused about the law of the averages is no wonder; even Spence is apparently confused about it. He suggests that the task of a rainmaker was made easier, because an extended drought increased the likelihood for rain.

It is impossible to read Spence's book without being compelled to make comparisons with more recent weather modification activities. Some striking similarities are present. Overstatement continues to be employed to sell rainmaking, with one current euphemism for such activities being "weather resources management". Journalists' reporting of the subject remains somewhat misleading or inaccurate, and the public tends to accept the same fallacious reasoning. As always, interest in pluviculture is revived whenever a drought occurs. To justify government funding of weather modification programmes, politicians rely to some extent on the same "it's worth a try" or "it can't hurt" arguments. If Spence's history of American rainmaking were extended to the present, how different would it be? □

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CHAPPIE. "This is great. Maud wants me to take her to the foot-ball game. I'll just buy a thunder shower and knock out the whole business."

Rainmaking Humour, from *Harper's Weekly* October 24, 1891.

Two psychology textbooks recently reviewed in *Nature* (**289**, 710; 1981), *Behavioral Neuroscience* (by C. W. Cotman and J. L. McGaugh) and *Physiological Psychology* (by T. S. Brown and P. M. Wallace), are available in the UK in a cheaper international edition. Both are published by Academic Press, and the prices of the international editions are £6.25 and £6.40, respectively.