SPAS AND BALNEOLOGY IN THE UNITED STATES

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People have used geothermal water and mineral waters for bathing and their health for many thousands of years. Balneology, the practice of using natural mineral spring water for the treatment and cure of disease, also has a long history. Based on archeological finds in Asia, mineral water has been used for bathing since the Bronze Age, about 5000 years ago. Many hot springs sources have been used in connection with religious rites in Egypt and by the Jews in the Middle East. The Greeks, Turks and Romans were famous for their spa development and use from Persia to England. The word "spa" traces its origin to a town near Liege in southern Belgium near the German border. Here a spring, of iron bearing water, was used by an ironmaster in 1326 to cure his ailments. He founded a health resort at the spring called Espa (meaning fountain in the Walloon language). Espa became so popular, that the word known in English as spa, became the common designation for similar health resorts around the world (Swanner, 1988).

Today, especially in Europe and Japan, the use of medically supervised spas have long been accepted. They are used both for treatment and preventive therapy. The former Soviet Union has 3,500 spas and some 5,000 reconditioning centers all administered and run by the state. In the former Czechoslovakia, there are 52 mineral water health spas and more than 1,900 mineral springs where every year about 220,000 citizens are granted free spa treatment for three weeks, paid by the national health insurance program. In Japan, over 1,500 spas exist and 100 million visitors use them every year. These international uses have been documented in previous Geo-Heat Center Bulletin articles (Lund, 1989; Lund, 1990, and Sekioka, 1975).

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Figure 1. Mohawk Indians at the High Rock Spring, NY (Swanner, 1988).

In the United States, the use of natural springs, especially geothermal ones, have gone through three stages of development: (1) use by Indians as a sacred place, (2) development by the early European settlers to emulate the spas of Europe, and (3) finally, as a place of relaxation and fitness.

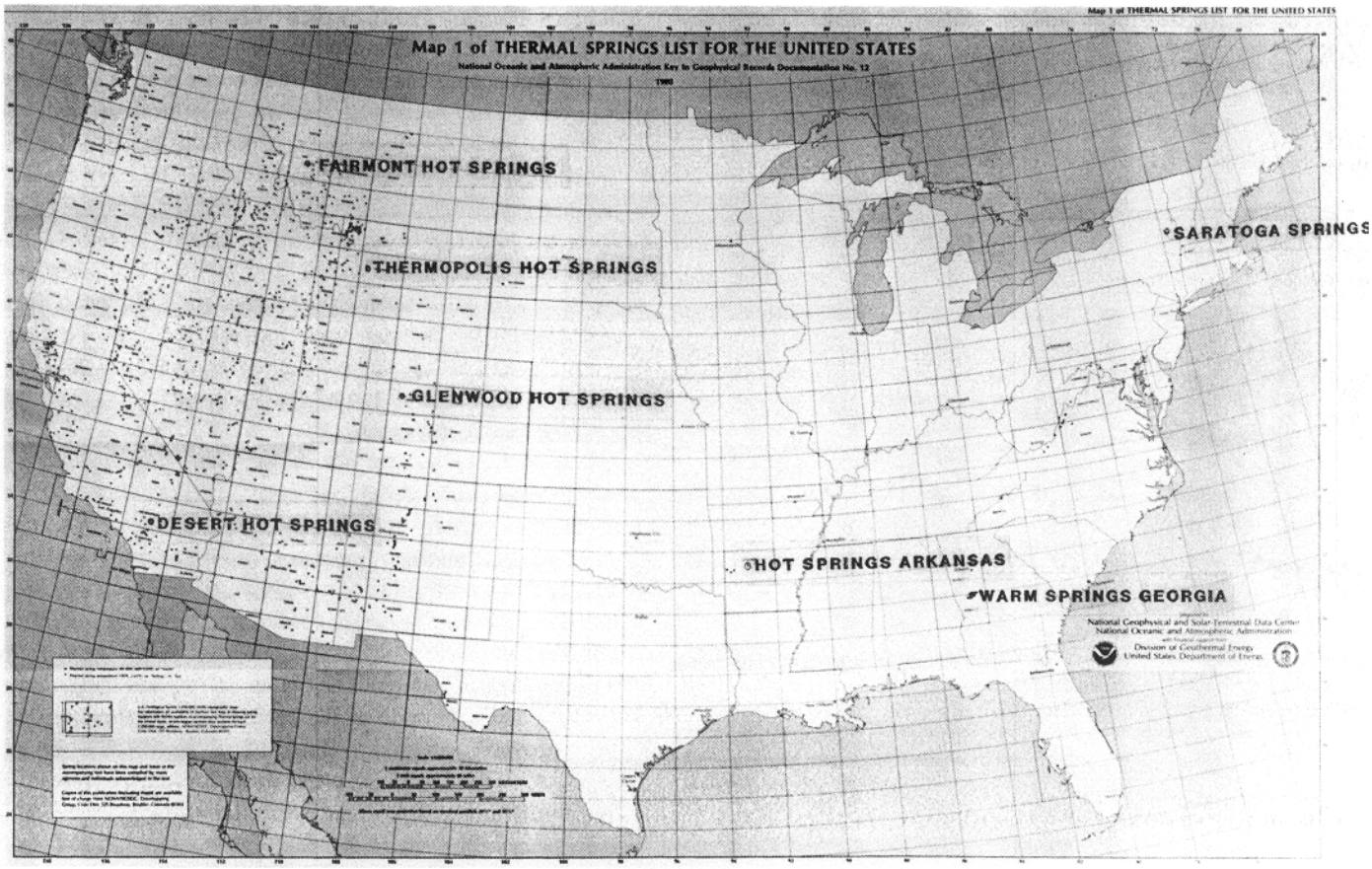
The Indians of the Americas considered hot springs as a sacred place where the "Great Spirit" lived, and thus were great believers in the miraculous healing powers of the heat and mineral waters. Montezuma spent time at a spa, Agua Hedionda, to recuperate from his strenuous duties (see also, Salgado-Pareja, 1988), which was later developed into a fashionable spa by the Spaniards (Swanner, 1988). Every major hot springs in the U.S. has some record of use by the Indians. They were also known as neutral ground, where warriors could travel to and rest unmolested by other tribes. Here they would recuperate from battle. In many cases, they jealously guarded the spring and kept its existence a secret from the arriving Europeans for as long as possible. Battles were fought between Indians and settlers to preserve these rights. The early Spanish explorers such as Ponce de Leon and Hernando DeSoto were looking for the "Fountain of Youth", which may have been an exaggerated story of the healing properties of one of the hot springs.

The early European settlers in the 1700 and 1800s, found and used these natural hot springs and later realizing their commercial value, developed many into spas after the tradition in Europe. Many individual developments were successful such as at Saratoga Springs, New York; White Sulphur Springs, West Virginia; Hot Springs, Virginia; Warm Springs, Georgia, and Hot Springs, Arkansas. However, the U.S. did not have the government, trade unions, social security and a national health insurance program to support these developments. Thus, in spite of the benefits of spa therapy that had been proven successful in Europe and elsewhere in the world, the U.S. lagged behind in the development of these mineral springs even though some were acquired by state and the federal government. By the 1940s, the interest in spas languished, and most of the majestic resorts went into decline and closed.

Finally in recent years, the interest in hot spring soaking and physical fitness has renewed the development of spas. This natural way of healing and the 'back to nature' movement has in many ways rejected formalized spa medical treatment developed in Europe. In fact, the average person in the United States knows little of spa therapy and its advantages as many of the medical claims has been outlawed in the U.S., and the natural waters have required chlorination or other chemical treatment. The main reason people in the U.S. go to geothermal spas are to improve their health and appearance, and to get away from stresses and to refresh and revitalize their body and mind. Unlike European spas where medical cures of specific ailments are more important, U.S. spas give more importance to exercise, reducing stress, lifting depression and loosing weight.

The use of mineral and geothermal waters has developed along three lines in this country: (1) the more plush hot springs resorts with hotel-type services and accommodations, (2) commercial plunges or spring pools and soaking tubs with perhaps a snack bar or camping facilities, and (3) the primitive undeveloped springs without any services (Sunset Magazine, September 1983). Many resorts and natural hot springs have an informal dress code while soaking, including nude bathing. They have satisfied health department requirement for chemical treatment by allowing the water to continuously flow through without treatment. Several publications have been written on the subject, documenting these facilities and their use. In the case of the resorts, two books are available: "The Best Spas" by Van Itallie and Hadley, 1988, and "The Ultimate Spa Book" by Sarnoff, 1989. Plunges and hot springs are well documented in several publications, such as: "Great Hot Springs of the West" by Kaysing, 1990, "Hot Springs and Hot Pools of the Northwest and Eastern States" by Loam and Gersch, 1992, and "The Hiker's Guide to Hot Springs in the Pacific Northwest" by Litton, 1990. Similar publications are also available for other parts of the country.

There are over 115 major geothermal spas in the USA and many more smaller ones along with thousands of hot springs (1,800 reported by NOAA, 1980) as shown in Map 1. The majority of these are located in the volcanic regions of the western states; but, several famous ones still exist in the east (see USGS Publications 1979 and 1983). The major spas are estimated to have an annual energy use of 1.45 x 10^{12}Btu (1.531 x 10^{12}kJ), or an equivalent of 340 thousands barrels of oil. In this Bulletin, we have attempted to describe selected examples of major spas in the U.S., including some of the more famous; but, obviously space does not allow mention of all of these. Previous Bulletins have articles concerning other spas and hot springs (Lienau, 1976; Lund, 1978a; Lund, 1978b; McLain, 1978; Lund, 1979; Lund, 1981, and Youngs and Higgins, 1982).



Map 1. Thermal Springs of the United States (NOAA, 1980).

Geothermal water has been used extensively for the hot pools and baths, but not for heating or cooling the structures. Space heating was attempted in the past at many resorts, however, with mixed to poor results. Pipes would corrode or plug with deposits and require frequent repairs, replacement and cleaning. The expense was high and thus “natural” space heating was usually replaced with conventional fossil fuel systems. Today, we at the Geo-Heat Center and other geothermal experts understand and solve these problems on a routine basis. The cost of installing the proper equipment and safeguards are more than offset by the savings in annual heating costs over fossil fuels. The Geo-Heat Center has a technical assistance program funded by USDOE to provide free engineering and economic design and analysis of any use of a resource for heating and/or cooling. Assistance can be obtained by contacting the Geo-Heat Center.

REFERENCES

Kaysing, Bill, 1990. 'Great Hot Springs of the West', Capra Press, Santa Barbara, CA.

Loam, Jayson and Madorie Gersch, 1992. 'Hot Springs and Hot Pools of the Northwest', Aqua Thermal Access, Santa Cruz, CA.

Lienau, Paul J., 1976. 'Geo-Heated Swimming Pool', Geo-Heat Center Quarterly Bulletin, Vol. 2, No. 1, Klamath Falls, OR.

Litton, Evie, 1990. 'The Hikers Guide to Hot Springs in the Pacific Northwest', Falcon Press, Helena, MT.

Lund, John W., 1978a. 'Big Springs', Geo-Heat Center Quarterly Bulletin, Vol. 3, No. 3, Klamath Falls, OR.

Lund, John W., 1978b. 'Steamboat Springs, Nevada', Geo-Heat Center Quarterly Bulletin, Vol. 3, No. 4, Klamath Falls, OR.

Lund, John W., 1979. 'Calistoga, California - Historical Spa Community', Geo-Heat Center Quarterly Bulletin, Vol. 4., No. 3, Klamath Falls, OR.

Lund, John W., 1981. 'Chena Hot Springs, Alaska', Geo- Heat Center Quarterly Bulletin, Vol. 6, No. 3, Klamath Falls, OR.

Lund, John **W.,** 1989. "Geothermal Utilization in Daghestan, USSR', Vol. 12, No. 1.

Lund, John W., 1990. 'Geothermal Spas in Czechoslovakia', Geo-Heat Center Quarterly Bulletin, Vol. 12, No. 2, Klamath Falls, OR.

McLain, David, 1978. 'Lava Hot Springs, Idaho", Geo-Heat Center Quarterly Bulletin, Vol. 4, No. 1, Klamath Falls, OR.

Muffler, L. J. P., editor, 1979. 'Assessment of Geothermal Resources of the United States - 1978', Geological Survey Circular 790, USGS, Reston, VA.

Reed, Marshall J., (editor), 1983. 'Assessment of Low Temperature Geothermal Resources of the United States - 1982', Geological Survey Circular 892, USGS, Reston, VA.

Salgado-Pareja, Javier S., 1988. 'Hydrothermal Activity in Mexico: Its Utilization for Generation and Balneology, Geo-Heat Center Quarterly Bulletin, Vol. It, No. 2, Klamath Falls, OR.

Sarnoff, Pam Martin, 1989. 'The Ultimate Spa Book', Travelers Bookshelf, Warner Books, New York, NY.

Sekioka, Dr. Mitsuru, 1975. 'Non-Electric Uses of Geothermal Energy in Japan', Geo-Heat Center Quarterly Bulletin, Vol. 1, No. 2, Klamath Falls, OR.

Sunset Magazine, September 1983. 'Hot Springs All Over 'Me West', p.74-79, Menlo Park, CA.

Swanner, Grace Maguire, 1988. 'Saratoga - Queen of Spas', North Country Books, Inc., Utica, NY.

'The Geysers of California (1873)', 1980, Geo-Heat Center Quarterly Bulletin, Vol. 5, No. 2, Klamath Falls, OR.

TherrrW Springs List for the United States, 1980. (Complied by George W. Beffy, Paul Grim and Joy lkelman) NOAA, Boulder, CO.

Van Itallie, Theodore B. and Leila Hadley, 1988. 'The Best Spas', Perennial Library, Harper & Row, New York, NY.

Youngs, Leslie, G. and Chris T. Higgins, 1982. "Historical Use of Moderate-Temperature Geothermal Resources - Calistoga, Napa County, California', Geo-Heat Center Quarterly Bulletin, Vol. 6, No. 4, Klamath Falls, OR.