

METEOROLOGY

# The Truth About Death Valley

Perhaps the Hottest Place in the World, Yet Not Without Freezing Nights, Death Valley Becomes a Mecca for Tourist

By FRANK THONE

**H**OT? Of course it's hot. Maybe the hottest spot on the map. Any town may claim the dubious distinction of being the hottest place in the country, for a day or so at least, during the weeks when the grain harvesters clatter in the fields and asphalt gets soft and sticky in city streets.

But the thermal capital of the United States will still remain in Death Valley. This strip of desolation in southeastern California holds the highest honors in heat for the Western Hemisphere, and a few years ago, before it was ousted by the sizzingly-named city of Azizia in North Africa, it was the world's champion mercury-booster.

Death Valley is a deep trough between two mountain ranges. It is something over a hundred miles long and averages ten miles wide. Within less than a hundred miles of Mt. Whitney, the highest peak in the United States proper, it sinks its lowest depression to 276 feet below sea level. This is official measurement; there may be lower spots in the valley still awaiting the surveyor's telescopic eye. For ages it has been the catch-basin of desert streams, and it is claimed was once the scene of geyser action that would have made even Yellowstone look tame; so that there is on its arid floor a vast accumulation of concentrated mineral salts of various kinds, including the famous borax deposits that until a few years ago supplied the world. It got its name in the epic gold-rush days of '49, when a starved and decimated party of emigrants, who had struggled through it with infinite sufferings, looked back and gave it the sinister title that has clung to it to this day.

It was on a blazing midsummer day eighteen years ago, on July 10, 1913, that the official thermometer at Greenland Ranch recorded a temperature of 134 degrees Fahrenheit. This figure stood for nine years, two months and three days, until September 13, 1922, when the aforementioned Tripolitan town of Azizia sizzled itself up to 136 degrees in the shade—if any.

Both these figures are challenged by

See Front Cover claimants of caloric honors for other hot spots on the earth. But Azizia remains champion, and Death Valley runner-up for world honors and champion of the Western Hemisphere, because these temperatures are official, obtained by certified thermometers in standard scientific mountings. To claims of higher temperatures elsewhere, it may be replied that thermometers exposed to the sun and to reflection from the sands, and possibly closer to the heated ground, might have shown greater temperatures on that hottest of recorded days in Death Valley. Dark ground absorbs and holds heat and hence warms up faster than the air above it: the enterprising Washington newspaper reporter who used to get a front-page story every August by breaking an egg on the Pennsylvania Avenue asphalt and letting it slowly fry there was only taking advantage of this well-known phenomenon of physics.

## Consistent Performer

But Death Valley's claim to distinction is not based on a single spectacular day's work. Death Valley is a consistent performer. It delivers a very high average temperature year after year, and practically every summer it turns out a few days—or perhaps even weeks—of weather fit for old-timers to brag about. Though it must be a trifle discouraging to have it so hot that you can tell an incredible tale without having to lie.

It can do a handsome job in droughts, too. Months on end without the hundredth-inch sprinkle of rain that is the U. S. Weather Bureau's minimum requirement for a rainy day. When the rest of the country was parching in the great drought of 1930, Death Valley outdid itself. It had no recorded rain all year, and the drought overlapped on one end into December, 1929, and into January, 1931, on the other: 401 consecutive days on which no measurable precipitation occurred!

The whole story of Death Valley's climate has been made the subject of a thorough scientific examination by Ernest E. Eklund, of the Weather Bureau office in San Francisco.

The station where Mr. Eklund's data were obtained is at Greenland Ranch, a property of the Pacific Coast Borax Company. Here the Weather Bureau has installed its instruments, and employes of the company have been trained in attending them and keeping the records. It is one of many such "cooperative stations" maintained over the country.

That the name, Greenland Ranch, has nothing to do with the oft-sung "icy mountains" of the old hymn is amply demonstrated by the records—though ice is by no means unknown there in the winter. It refers more to the patch of cool greenness that relieves the iron hues of the desert at this place, where fields of alfalfa and a luxuriant grove of date palms drink from warm water in irrigation ditches. It is a true green land, welcome to the eyes of the traveler, wearied with the monotonous gray of desert vegetation or blinded by the staring white of the salt marshes.

The water that makes Greenland Ranch possible comes down from the mountains partly in a small stream known as Furnace Creek. Greenland Ranch is located at the "sink" of this stream, where it loses itself and disappears under the sands. The oasis is



## A STUDY IN CONTRAST

*The luxuriant foliage of Greenland Ranch, surrounded by the arid lands of the desert. It was the official Weather Bureau thermometer at this ranch that gave the record reading of 134 degrees Fahrenheit.*



#### DEATH VALLEY BENEATH A GRIM GUARD

*Furnace Mountains, one of the grim, desolate ranges that stand guard over the Valley. From these mountains comes the small creek that waters Greenland Ranch, the oasis of the Valley.*

therefore known to many persons as Furnace Creek Ranch. This name again has nothing to do with the temperature, though it certainly seems more in keeping with the region than the alternative Greenland title. It refers to a number of rude ore-roasting furnaces found along its course by the pioneers of '49. These men thought the furnaces had been built by the even earlier Mormon pioneers, but the official historian of the Church of the Latter Day Saints states that he finds no records of any of Brigham Young's followers having sought minerals in Death Valley. It is more likely that the furnaces that gave the creek its name were built by Mexican miners.

Greenland Ranch was a bustling place in the old days, when the borax company's picturesque and much-advertised twenty-mule teams (really consisting of eighteen mules and a lead span of horses) freighted ponderous wagons of borax out of the valley. Now, however, better-paying borax beds have been discovered elsewhere, and mineral operations have been largely suspended. But large numbers of tourists now come to see the valley during the cooler months, so that there is still a good deal of life at the old ranch; and even in summer there are at least the caretakers, so that the weather record is kept complete, with not a hot day missing.

The Weather Bureau's cooperative station was established in 1911, so that accurate and complete records for twenty years are now available. Reviewing these records, Mr. Eklund said:

"High temperatures are by no means rare in Death Valley, judging from the records of Greenland Ranch, and it seems probable that even higher temperatures occur on the floor of the Valley, 98 feet lower than Greenland

Ranch, considering the probable cooling effect of irrigated land and green vegetation at Greenland Ranch and the greater effect of insolation at the lower elevation. Extreme maximum temperatures of 120 degrees or higher have occurred at Greenland Ranch in every month from May to September, inclusive, and such temperatures have occurred there each year since the record began. In July, 1929, the mean maximum temperature was 119.5 degrees.

"Temperatures of 100 degrees or higher have occurred each month from March to October, inclusive, and temperatures of 85 degrees or higher have occurred during every month of the year. The average number of days with maximum temperature of 120 degrees or higher in June is 4, in July 10 and in August 5. In July and August, 1917, maximum temperatures of 120 degrees or higher were recorded on 43 consecutive days and during the same summer maximum temperatures of 100 degrees or higher were recorded on 113 consecutive days. This record was exceeded in 1916, however, when 126 consecutive days fell within this classification."

#### Gets Cold Too

But heat is not the whole story of the climate of Death Valley. It can get cold there, too. Mr. Eklund's study shows that the temperature often drops to freezing point or lower in the autumn and winter months. In December, January and February, 1928-1929, there were 72 freezing days in a row. On January 8, 1913, just six months before the memorable record-breaking 134-degree July day, a temperature of 15 degrees was recorded, and the following day a drop to only one degree higher. This marked the minimum for

the whole twenty years of observation, as the 134 degrees marked the maximum.

But the ordinary autumn and winter temperatures in Death Valley are not so severe as that. It is during these seasons that most tourists now visit the valley, for there are good automobile roads and comfortable caravansaries there now, and the place has become so popular that the U. S. National Park Service has recently been making an intensive survey of the area, with the idea of setting it apart as a new National Monument or possibly even as a full-fledged National Park.

If the area does become a part of the great national system of outdoor nature observation and recreation areas, the crowds will come as their enthusiastic forerunners come today, in the winter, when such places as Yellowstone, Glacier and Rocky Mountain National Parks are blocked with snow. They will find the days warm, but the nights will be cool—"two-blanket" nights as a rule. The best tourist season is from October to April; after that there begin to be warm nights.

But winter or summer, the visitor to Death Valley can be reasonably sure of fair weather. Not every year can equal the record of the Great Drought of 1930 already mentioned, with its 401 rainless days, but there is seldom enough rain to spoil a picnic. When it does come, to be sure, it is apt to be a cloudburst, which may be dangerous if it catches you in a dry stream-bed. However, such uncomfortable phenomena are very rare.

Of Death Valley's rainlessness, Mr. Eklund says:

"Rainfall of 0.01 inch or more in 24 hours occurs on the average only seven times a year (Turn to page 76)

or wax; and on the other end of the gold lines, set the bottle electrified: then bend the springing wire, by pressing it with a stick of wax till its ring approaches the ring of the bottle wire; instantly there is a strong spark and a stroke, and the whole line of gold, which completes the communication between the top and bottom of the bottle, will appear a vivid flame, like the sharpest lightning. The closer the contact between the shoulder of the wire, and the gold at one end of the line, and between the bottom of the bottle and the gold at the other end, the better the experiment succeeds. The room should be darkened. If you would have the whol filletting round the cover appear in fire at once, let the bottle and wire touch the gold in the diagonally opposite corners. *I am, &c.*

B. FRANKLIN.

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#### METALLURGY

### Atoms Are Wanderers Even In Most Solid Metal

**A**TOMS, even the heavy atoms of lead, are wanderers. Prof. J. G. von Hevesy, of the University of Freiburg in Breisgau, has been investigating their properties. Lead atoms are constantly in motion, even in solid metal, he believes. In an alloy of lead and gold, at a temperature half again as high as that of boiling water, the atoms wander through a space of a hundredth of a cubic inch in a day. When there is nothing but lead in the lump, however, moving about is not nearly so easy.

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#### MEDICINE

### Father Gives Baby Malaria By Blood Transfusion

**T**HE DANGER of giving malaria by blood transfusion or by injections of whole blood for other purposes such as the prevention of measles was called to the attention of physicians by Dr. I. R. Jankelson of the Boston City Hospital in a report to the American Medical Association.

Dr. Jankelson described the case of a father who unwittingly gave malaria to his new-born baby in this way.

The father, an Italian, who had been living in Boston for the last twenty years, had been complaining of stomach trouble for nine or ten years. He was being treated for stomach ulcer with more or less success, careful examination having ruled out any other cause of his trouble.

At about that time his wife had a baby. This infant suffered from hemorrhages and in the course of treatment was given several ounces of the father's blood. The child developed malaria. Careful examination of the father's blood revealed the presence of the malaria parasite.

The father recalled that at the age of five, when he was living in Italy, he had had malaria, and that about once or twice a year he had a chill, lasting about one hour and followed by profuse perspiration.

Because a recipient of blood is usually in a precarious state of health, he is entitled to every safeguard against transmission of disease from the donor, Dr. Jankelson pointed out.

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(From page 71) and the frequency of rainfall is not much greater if immeasurable amounts, or traces, are also included. In January, February and March, measurable rainfall occurs on the average one day each month while in practically all other months the average number of rainy days is considerably less than one-half. The greatest number of rainy days in one year was in 1913 when measurable rainfall occurred on 16 days and the least in 1929 when no rain, not even a trace, was recorded. The greatest number of rainy days in any one month was five in March, 1918, but the total monthly precipitation was only 0.75 inch.

"A daily rainfall of one inch or more has been recorded at Greenland Ranch only four times in nearly twenty years and the greatest amount ever recorded in 24 hours is 1.40 inches."

#### Old Tales Exaggerated

With so much heat and so little water, one would naturally expect to see the valley an absolute, staring desert, with no leaf or stem of plant life and not so much as an insect to speak for the animal kingdom. Such were the descriptions published by early California writers, who never took the trouble to visit the region, but relied on the tales of horror told by survivors of trapped pioneer trains, added to by their own imaginations.

But the fact is, that most of the floor of the valley is covered with vegetation. Several botanists have worked in the place, and their lists total somewhere in the neighborhood of 200 species, ranging from short-lived annuals to the tough and useful mesquite. Some of these, like sedges and cattails, live along the edges of streams that run down from the mountains and wander out, losing themselves in flat, marshy meadows. Others, however, bravely live on the dry upland, holding their gray-green leaves like defiant banners.

And where there are plants there are also animals. There is a special variety of the bighorn or mountain sheep that is found only in Death Valley and on its bordering mountain ranges. Threatened with extinction a few years ago, these animals are now given the benefit of an absolute closed season and are staging a hopeful come-back. There is an astonishing development of rodent life, including two most interesting fellows, the trade-rat or pack-rat and the long-legged, leaping kangaroo rat.

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