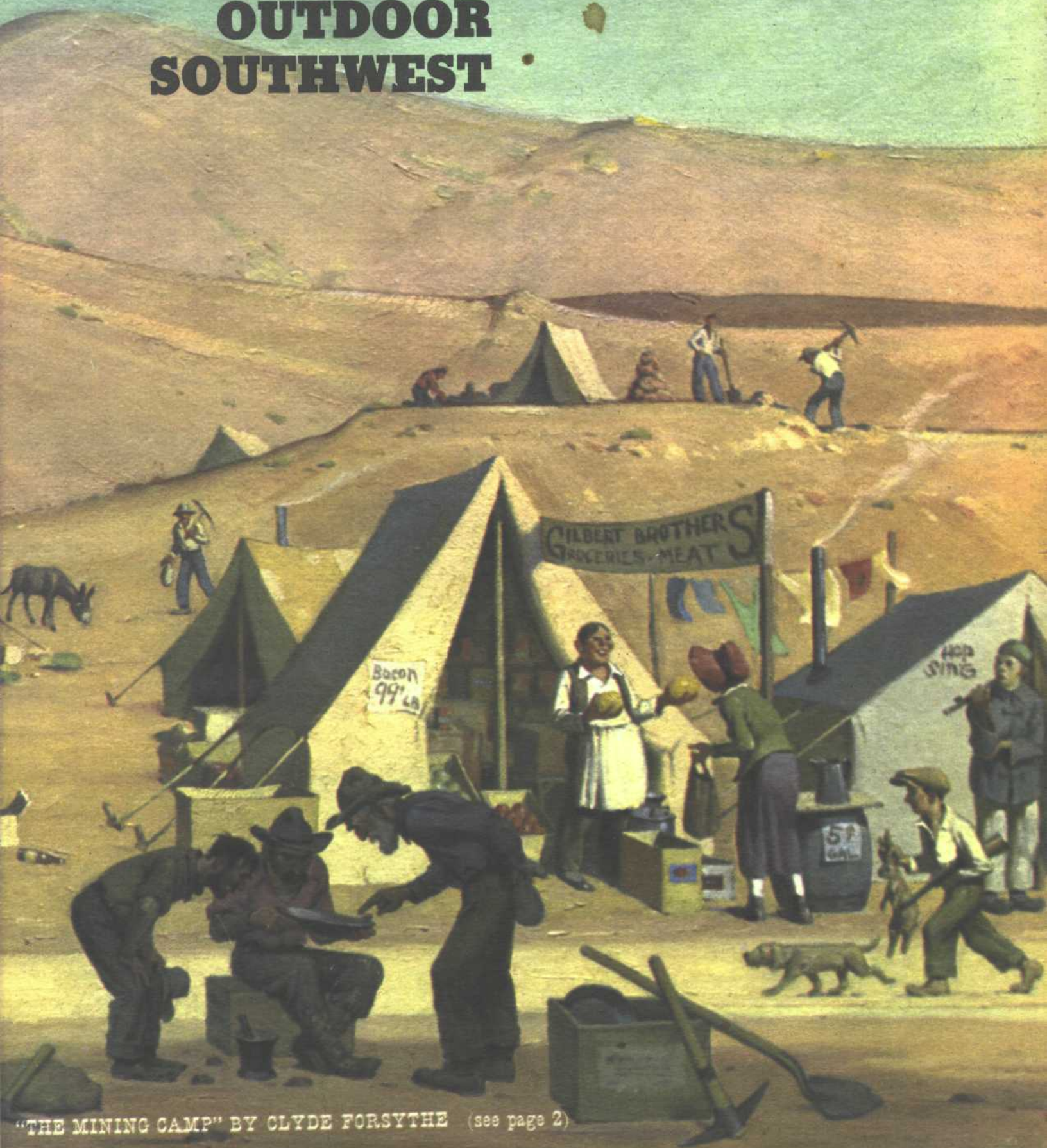


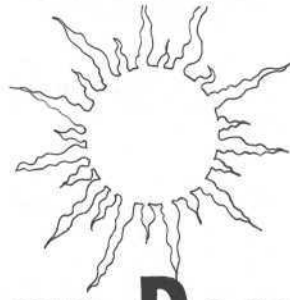
JULY, 1960  
40 Cents

# Desert

... magazine of the  
**OUTDOOR  
SOUTHWEST**



"THE MINING CAMP" BY CLYDE FORSYTHE (see page 2)



# With Patton on Desert Maneuvers

By WELDON F. HEALD

*Mr. Heald's work has appeared with frequency in this and other publications. His nature-travel articles have won for him a reputation as one of the West's most capable writers.*

**D**URING WORLD WAR II I had a fascinating job. I was one of a group of Army climate specialists in the Research and Development Branch of the Quartermaster Corps. Our business was to find out the exact year-round environment and weather conditions on all global fronts. Such detailed studies and field work were the basis for designing correct clothing and equipment to make our troops efficient fighting machines from the tropics to the poles. For us, this meant assignments in the jungle, on mountain tops, among arctic ice-floes, and even five days afloat on a rubber raft in the Caribbean.

But, to me, my most interesting tour of duty was on General George S. Patton's maneuvers in Southern California's Mojave and Colorado deserts during the summer of 1942. There I learned what extreme heat and dryness can do to a man. I also found out how to minimize the stresses and strains of one of the world's toughest summer climates, and how to adapt to them. In fact, it was General Patton's maneuvers that made a confirmed desert rat out of me. I decided then and there that I would rather live 12 months of the year in our arid Southwest than anywhere else on earth.

There were compelling reasons for these strenuous Army exercises under the broiling sun. In 1942 the Nazi's "Desert Fox," Field Marshal Rommel, and British General Montgomery were pushing each other around in North Africa. A plan, called "Operation Torch," was formulated to augment Allied strength there with American troops. General Patton was picked for the job. An ex-cavalryman turned tank expert, he was ordered to train and equip a North African task force to be ready for overseas duty in late October.

From a military point of view no better man could have been chosen. With characteristic vigor, the General immediately went into high gear. Camp Young rose like a magic city near barren Shaver Summit, 28 miles east of Indio. There he organized the 1st Armored Corps; and from there he gave his men the most rigorous training in desert warfare our army or any other army has ever known.

Although an outstanding strategist, General Patton was short on physiology. His method was to harden the men to desert heat and aridity in the shortest possible time—"toughen 'em up and damn the temperature!" But instead of hardening, an increasing number of the troops became casualties. Something was definitely wrong.

The Quartermaster General assigned Sir Hubert Wilkins and me to this grim human proving ground. Our orders were to check on the performance of clothing and

equipment, both issue and experimental, and to suggest improvements in the light of actual experience in the field. Implied also was a hint that we discover if the multiplying physiological crackups were in any way due to Quartermaster inadequacy. Our headquarters were Blythe Air Base, on the eastern edge of the maneuver area. There we worked in collaboration with the Air Corps Aero Medical Laboratory of Wright Field, and other Army test groups.

My co-worker, Sir Hubert Wilkins, was one of the finest men I ever knew. Australian-born Arctic and Antarctic explorer, he was an expert on desert, tropic and cold-weather clothing. From the beginning of World War II until his death in 1958, at the age of 70, he served as an invaluable consultant to the Defense Department on these subjects. Moreover, he was one of the toughest individuals who ever lived. Powerful, hardy, indomitable, and absolutely tireless was Sir Hubert.

The two of us used and tested each item the Quartermaster had dreamed up for desert warfare. This covered everything, from field stoves to handkerchiefs, and included footwear, clothing, sleeping bags, tents, and other necessities, as well as a few meager luxuries. We found the most comfortable desert summer clothing to be light khaki trousers and an open-necked, long-sleeved cotton shirt. The powerful effects of the sun were felt more in shorts than anything else, and we quickly discarded them. Rubber-soled shoes of any type were heat conductors and soon developed foot soreness. For headgear we preferred an experimental-type helmet built with a detachable frame, which raised it and permitted air to circulate around the top of the head. Although this helmet was surprisingly cool, and suitable for mild activities, it tended to wobble during heavy exercise. Then a regulation helmet is more desirable—pith, plastic, or other good insulating material.

We tested all the tents, too, night and day, and took comparative hourly temperatures. We learned that the addition of an outer canvas covering, 12 to 15 inches above the roof, reduced daytime temperatures 8 to 12 degrees Fahrenheit. The covering not only shades the tent roof, but the free air space between acts as insulation. This is true also with buildings, and many at Camp Young were provided with a second roof.

But the most interesting tests were made with human material. Day after day and night after night for weeks on end that summer thousands of men swarmed over the Southern California desert. Under unbelievably grueling conditions they manned tanks and other vehicles, covered

miles of sizzling hot country on foot, fired every kind of weapon, and engaged in all types of combat. General Patton's maneuvers were for real and they simulated actual battle procedure. The din was terrific and a visitor from Mars might have mistaken it for a maniacal carnival.

As mere observers we were proscribed from slowing down the action with our medico-scientific foolishness. However, Blythe Air Base G.I.'s were made available to the test groups, and with them we went through all the exercises of the maneuvers, minus tanks and heavy artillery. Temporary laboratories were established and Sir Hubert and I took temperatures, felt pulses, and weighed more human subjects oftener than a couple of nurses in a maternity ward. For background we kept a complete record of pertinent weather information while in the field.

The human being's reaction to desert heat and dryness was a relatively new study in the United States. Because water is always a scarce commodity on the desert, commanders were conserving it by trying to accustom the men to a quart, or even a pint, a day for all purposes. This did save water, but it expended men. Their bodies just wouldn't cooperate. On lively skirmishes in 120-degree temperature the perspiration oozed out of me like juice from a grilled chop. In fact, on several occasions I lost weight through sweating at the rate of two to four pounds an hour! Furthermore, the test groups found that men on maneuvers in the burning heat of the desert sun sweat as much as two and a half gallons in 24 hours. No wonder the men couldn't take it. Such mounting water deficits quickly made hospital cases, not hardened campaigners. If the troops were to be welded into healthy, efficient fighting units every gill of water lost during the day had to be made up.

At this point desert rats, prospectors and other old-timers will rise up and say, tain't so. They will recount prodigious camel-like feats accomplished by leather-skinned sons of our Southwestern deserts. In the main their stories will be true. Facts may be somewhat stretched in the retelling, but there are many well-authenticated cases of individuals who have gone without water in the desert for days and still lived. This is particularly true of seasoned, acclimatized men. Nevertheless, Army field data proved

conclusively that in the long run each 24-hour water loss had to be replaced if soldiers were to live to fight another day.

From the mass of figures assembled, we worked out a detailed scale of human water requirements. With it commanders in the field could estimate how much water was needed each day by knowing the approximate average temperature, planned combat activities (reduced to individual kilogram calories of energy), and the number of men involved. Other related factors, when known, such as humidity and wind velocity, could be included in the formula. It was as simple as that.

The test groups also compiled tables on the length of time men could survive without water at various temperatures; suggested methods of conserving body moisture when water is short or unavailable; and predicted the distance men could walk with given amounts of water. In this last investigation we learned that 20 to 25 miles is about the limit for walking in the desert, but whatever the individual limit was, each additional quart of water boosted a man's capability for walking about 5 miles. Thus, if a G.I. walked five miles and quit, the additional water would carry him another five.

But as soon as we disposed of one desert hot-weather problem, up popped another. After the men learned to drink copiously, even while on active maneuvers, some of them developed painful, spasmodic contractions of various muscles. Many people think that these symptoms are due to drinking while doing strenuous exercise. But they are not. They are heat cramps caused by lack of salt.

Sweat contains salt and perspiring

reduces the necessary amount. Unfortunately, man, unlike most animals, seldom feels a craving for salt, so must consciously make up his losses. Salt tablets or salted water in the proportion of one ounce of salt per gallon is usually sufficient. But sweat rates vary from individual to individual, and the amount of salt required differs markedly. Inhabitants of hot countries wisely keep a salt balance by eating highly seasoned foods. Mexicans on the hottest days sit down to meals liberally sprinkled with chili and hot sauces. We who take a light salad and a malted milk when the temperature soars, might well give a thought to our salt balance.

Heat prostration, called heat exhaustion by physiologists, was the most common form of breakdown on the maneuvers. That is true everywhere, and heat waves all over the world claim victims by the hundreds every year. It is really a protective mechanism for an embarrassed and overloaded heart laboring to maintain a proper heat balance. It occurs usually in a collapse resembling a prolonged faint, and the skin often becomes moist and clammy. This reduces the overload on the heart and gives it a chance to recover. We observed many cases of heat prostration. Rest in the shade is the only cure, but a dash of water in the face helps. People who die from heat prostration are usually those with weak hearts or general ill-health.

Heatstroke is our deadliest hot weather enemy, but only two cases came to our immediate attention. It is particularly insidious because there is a popular misconception as to what causes the attack. Most people believe that heatstroke is brought on by

*Continued on page 24*



LEARNING HOW TO LIVE AND FIGHT IN THE OPEN DESERT. MECHANIZED TROOPS LEAVE A DUSTY TRAIL AND CONVERGE ON A CONCRETE HIGHWAY DURING 1942 DESERT MANEUVERS

## With Patton On Maneuvers

— continued from page 7 —

direct exposure to the sun, so it is almost universally known as sunstroke. But the fact is that it can occur in shade as well as in sunlight. For heatstroke is simply an indication that the body is unable to rid itself of its mounting heat load and is becoming dangerously hot. A crude analogy, although by no means an exact parallel, is water boiling over in an automobile radiator. But what makes heatstroke such a killer is that the heat-controlling center in the brain—nature's super-thermostat—may get out of order. Sweating then slows down or ceases entirely, internal temperatures shoot up as a result and, if treatment is not given immediately, the victim dies. Luckily most cases are mild, and complete rest in the coolest and shadiest place available usually brings about recovery. In aggravated attacks, it is best to get a doctor pronto—even if he has to be flown in by helicopter.

However, healthy people in good training and fully acclimatized, should have no difficulty avoiding heatstroke. Factors which make one vulnerable in hot weather are poor general health, insufficient food, lack of salt, want of sleep, excess of alcohol or a generally run-down condition. The Army investigated the cases of 198 soldiers who died from heatstroke while training in the United States. Surprisingly, the victims were overcome in temperatures ranging from 79 to 120 degrees. In practically all cases the men who died

were already tired out, not well, not fully acclimatized to heat, or they were overweight. It would seem from this and similar studies that a heavily-built person is a poor risk in hot climates.

The test groups also examined secondary effects, including sunburn and tan. Our findings ran completely counter to popular opinion. Americans make a fetish of sun-bathing, highly esteeming a tanned skin as a sign of health and a standard of beauty. It is also an economic badge of good living. However tests on Army maneuvers showed that tanned bodies are actually more susceptible to overheating than white ones fresh from New York's East Side. The reason is that dark skins absorb a large portion of the sun's radiation, while light skin reflects it. Of course, in time a well-tanned man or woman gains immunity from the dangerous effects of ultra violet rays. But until that point is reached the body is vulnerable, and our conclusion was that probably only hardy individuals should expose much of their skin to the direct rays of the sun — especially while performing violent physical exercise.

From this it would appear that the Arabs have the right idea in wearing loose enveloping white robes of thin material. Such garments protect the body from the sun and cool the skin by constantly swishing the adjacent air into motion. Probably the coolest and most comfortable garments our

girls could wear in desert heat would be long full skirts of thin white material. But if they gave up their present predilection for shorts, the scenery along Palm Springs' Palm Canyon Drive would sharply deteriorate.

After weeks of work the test groups covered most of the problems humans face on the desert in summer. We thought we had some of the answers, too. Of course our findings and suggestions weren't immediately made a part of actual desert battle procedure. But little by little most of them have been adopted in subsequent Army operations. In fact, reports soon reached us that the Big General finally surrendered to the realities of the water situation, and water rations were increased to meet actual needs. Furthermore, we heard that human breakdowns, both on maneuvers and in combat, had been greatly reduced. So we felt that we hadn't worked in vain.

After our stint on the Southern California desert, Sir Hubert Wilkins and I separated and went on to other assignments, while General Patton sailed with his well-trained North African Task Force on October 24. He was completely successful in Morocco and Tunisia. In fact, his brilliant campaigns there, and later in Europe, resulted in his earning a place in history as one of the leading American generals of World War II. But, being a blunt and forthright man, always fearless in expressing his opinions, he dared to criticize the High Command. For this he was relieved from active combat duty and given a desk job. Unfortunately, General Patton's career came to an abrupt end in an automobile accident at Heidelberg, Germany, on December 21, 1945. He was then 60 years of age.

I shall always be grateful to the General. For it was indirectly through him I first learned that desert heat has a benign quality. I never felt better in my life than on the maneuvers. The searing sun seemed to burn the impurities out of my system, leaving a fresh, eager aliveness that I never experienced in humid regions. Learned there, too, was how to meet desert heat halfway, and to adjust rather than fight it.

Today I live all year in southern Arizona. Sniffing the thin, sharp, aromatic air of a summer morning and looking up at the star-studded sky in the black-velvet of night, I thank the Lord for the privilege of having been on General Patton's maneuvers. They made me hopelessly and forever a lover of the desert. ///

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