

close on five hours, and it was 12.50 before we reached the summit, nearly 7000 ft. above camp. The descent by the ordinary route on the S.W. was a sad contrast. The rock is loose, the afternoon sun beat down with great strength, and we had some difficulty in finding the top of the chimney, which is the key to this route. However, we were back in camp before dark.

The weather now appeared to be breaking, so we abandoned the idea of visiting Glacier Circle. Instead, we traversed Leda, Pollux and Castor from Asulkan Pass. Rain commenced that evening, and next morning through the clouds we could see at intervals that much snow had fallen higher up. Regretfully I departed for Toronto, with grateful recollections of a charming country, unspoilt as yet by funiculars, field-forges and *Congrès d'Alpinisme*.

THE SIERRA NEVADA OF CALIFORNIA.

BY FRANCIS P. FARQUHAR.

A LITTLE over sixty years ago the ALPINE JOURNAL published a review of Clarence King's 'Mountaineering in the Sierra Nevada,' in which the reviewer congratulated the Americans on the possession of a chain of mountains 'surpassing in vegetation and rivalling in height and picturesqueness of form, if not in extent of glacier and snow-fields, the Swiss Alps.'¹ From that day until 1929, when Mr. Gunther's admirable article, 'The Sierra Nevada of the Upper Kern River, California,'² appeared, scarcely a mention of this great range is to be found in the teeming volumes of the JOURNAL. Yet during these days it has been explored, surveyed and mapped; its peaks have nearly all been climbed, its natural history and its geological features have been described, and its praises have been sung by one of the greatest of mountain prophets, John Muir. To bridge this gap I shall endeavour to place before the readers of the ALPINE JOURNAL a condensed account of the Sierra Nevada of California with special reference to the interests of mountain-climbers.

The Sierra Nevada is officially defined as being 'limited on the north by the gap south of Lassen Peak, and on the south

¹ *A.J.* 5, 389-96.

² *A.J.* 41, 328-40.



Photo, Francis P. Farquhar.]

LOOKING N. ALONG THE PALISADES FROM SUMMIT OF MIDDLE PALISADE.

[To face p. 88.]

by Tehachapi Pass ' ³—that is to say, it extends from about latitude 40° 15' to latitude 35° 15', approximately 400 miles, in a general N.W.-S.E. direction. Its breadth varies from 40 to 80 miles. It lies entirely in California, excepting for a small area at Lake Tahoe where it is penetrated by an angle of the State of Nevada. Geographically and geologically it is a single unit, not connected with the Cascades, the Coast Range, or the ranges of the Great Basin. Throughout its length it forms a watershed from which streams flow W. into the great central valley of California, and E. into sinks and alkaline lakes which have no outlet to the sea.

The eastern streams are numerous but small, plunging rapidly except where they are checked by natural obstacles or artificial dams. Those on the W. are composed of many branches of varied character which, converging, enter the depths of vast canyons or gorges in powerful torrents. In their mountain courses they are not navigable, even by so pliable a craft as a canoe. The canyons of the eastern streams form direct avenues of approach to the passes which lead across the Sierra crest; in a few hours one may ascend from the hot desert valleys to the cool snows of the summit. On the western slope, however, the way is long and winding, following ridges rather than canyons, mounting gradually from grassy foothills, through sparse oaks, into the main forest belt of the mid-Sierra, until it emerges into a region of more open forests, of meadows, and of bare granite ridges. This region, at an altitude ranging from 6000 to 12,000 ft., with ridges and peaks rising 2000 ft. higher, is known as the High Sierra. The High Sierra is the realm of the pack-train, camper and mountain-climber; the middle region is divided between the lumberman, the cattleman and the automobile tourists; the lower canyons and foothills, once the land of gold, are now devoted largely to reservoirs for irrigation and hydro-electric power.

The principal streams of the western slope are, from N. to S.—the Feather River (*río de las Plumas*, of the Spaniards), the Yuba, the American (*río de los Americanos*), the Mokelumne (pr. *Mo-ke'l'-um-ne*), the Stanislaus, the Tuolumne (*Too-wol'-um-ne*), the Merced (*Mer-sed'*), the San Joaquin (*Hwa-keen'*), the Kings (*río de los Santos Reyes*, river of the Holy Kings; to be written, if you choose, *Kings'*, but never *King's*), the Kaweah (*Ka-wee'-ya*), and the Kern. All save one of these rivers spring from the main divide of the range; the Kaweah occupies an

³ *U.S. Geographic Board*: Fifth Report, Washington, 1921, p. 298.

angle formed by secondary divides, but its character is such as to place it among the high mountain streams. By the names of these rivers the principal districts of the Sierra are designated. One speaks, for instance, of the Feather River country, or of going to the Kings or to the Kern. The northern districts, as far S. as the Stanislaus, contain very little of outstanding interest to the mountain-climber, although for beauty of scenery, for camping, and for other purposes they have their special charms. Beginning with the Tuolumne, however, and extending with but a few gaps as far S. as the Whitney group in the Kern, plenty of first-rate climbing is to be found. A few miles S. of Whitney the character of the mountains changes abruptly, and the climber's interest ceases.

The Sierra Nevada is a 'block range.' That is, it is a single great block of the earth's crust, tilted on an axis so as to expose the eastern edge in a long escarpment, while the western edge, submerged, is covered with alluvial deposits. The vast extent of this tilting is demonstrated in the neighbourhood of Mt. Whitney, where a full 8000 ft. is the measure of the visible displacement. The composition of this great block is largely granite, using that term in a broad sense to include a variety of igneous rocks. Here and there on the surface of the granite batholith stand remnants of older ranges composed of metamorphic rocks of varied character. Ancient volcanic action is much in evidence at the northern end of the range and in the Owens Valley adjacent to the range farther S. A few small cinder cones are found near Mt. Whitney. The principal agencies, however, by which the present features of the Sierra have been formed are the tilting of the great block and the forces of stream erosion and ice erosion. Alternation of heat and cold has added finer details to the sculpture. It is now well established that there have been three glacial periods during the life of the present range, each of which has given its own touch to the surface. Out of these periods, supplemented by the force of mighty rivers and governed by the inherent structure of the rock, have come the Yosemite, the Kings River Canyon, and other superlative examples of glaciated valleys.

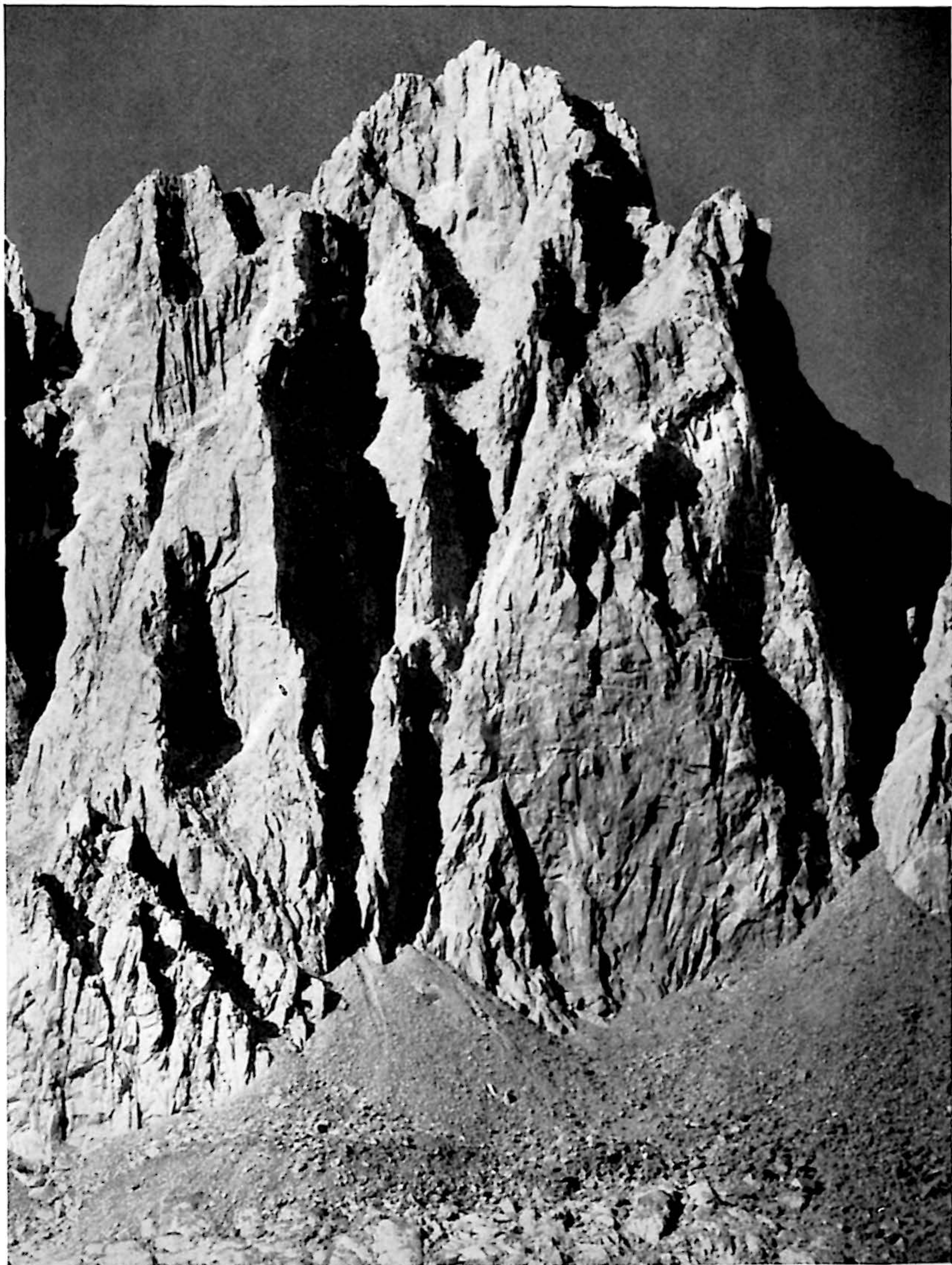
The unity of the Sierra Nevada seems to have been recognized by the earliest observers. The Franciscan, Fray Pedro Font, who first placed the name definitely on a map, writes in his diary on April 2, 1776 : ' and finally, on the other side of the immense plain, and at a distance of about forty leagues, we saw a grand Sierra Nevada [*una gran sierra nevada*] whose trend appeared



Photo, Marjery Bridge.]

THE PALISADES, LOOKING ACROSS THE CANYON OF THE MIDDLE FORK OF KINGS RIVER.

[To face p. 90.]



Photo, Ansel Adams.]

MOUNT WINCHELL, PALISADE REGION.

to me to be from south-southeast to north-northwest.'⁴ It is from this entry and the map that Font made to accompany his diary that we derive our name for the range. An Englishman would have called it 'The Snowy Range,' which means the same thing. It is apparent, therefore, that, strictly speaking, the name should be singular, but 'Sierra Nevadas' and 'Sierras' are so well established by usage that it is perhaps pedantic to object to them. On the other hand, no amount of usage can give sanction to such a solecism as 'Sierra Nevada Mountains.'

Notwithstanding the implication of its name, the Sierra Nevada is comparatively free from snow during the summer. In exceptional years the winter's snowfall remains on the passes and in the high valleys until late July, but ordinarily one may count on finding all save the very highest passes open for travel by the first of that month. Small snowfields at the bases of peaks and hard-frozen snow in shaded couloirs frequently last all summer. There are a number of small glaciers usually well covered with hard snow and practically free from dangerous crevasses. Perhaps the only spot in the Sierra at which an ice axe may be considered indispensable is the bergschrund at the head of North Palisade Glacier. Elsewhere it is rarely called into use, excepting in winter or early-season climbing, or where one is in deliberate pursuit of opportunities for its exercise.

The season for climbing extends ordinarily from the latter part of June to late September, but there is nothing to prevent ascents at other seasons save the difficulties of access. By November the snow begins to accumulate, and from that time until June the trails are impassable to animals. Since there is no all-the-year accommodation in the High Sierra, one must then resort to back-packing and camping in the snow. Nevertheless, there are certain bases from which winter climbing expeditions may be made without excessive effort, and, with the increase in the use of ski, it seems likely that a system of accommodation will in time be developed which will make the ascent of even the highest peaks in midwinter a practical matter.

The summer climate of the Sierra Nevada is one of its chief attractions. Perhaps nowhere else in the world can one enjoy high mountain-climbing under such ideal conditions. The

⁴ H. E. Bolton, *Anza's California Expeditions* (University of California Press), 1930, iv, p. 375. See also *Sierra Club Bulletin*, 1928, xiii : 1, p. 55.

days are for the most part sunny, often with superb white *cumuli* accentuating the deep blue of the sky. Now and then these clouds turn gray and gather into thunderstorms, but after a brief drenching all is clear again. Only on rare occasions does the weather become 'unusual' and the rain persist for several days. The nights are invariably cool, occasionally frosty; but there is an abundance of wood for camp fires, and, on the whole, one welcomes the crispness of these nights, with the stars glittering in the heavens and everything snug below. In the Sierra one sleeps on the ground—perchance beneath a tree, but with no need for cabin or tent. A warm sleeping-bag, with a light covering, is all that is necessary.

Until recently most climbs in the Sierra Nevada were incidental to exploring expeditions or to camping and fishing trips. Consequently, little preparation was made for the actual climbing and little time was available for studying routes. Moreover, the climbers, while well versed in the art of making their way through rough country and physically competent to surmount the greatest obstacles, were quite unacquainted with the technique of rock-climbing. In the past few years two things have brought about a substantial change: a rapid spread of knowledge of climbing technique, and easier access to the climbing region. By precept and by demonstration much has been learned about the best methods of rock-climbing and the use of the rope, so that a group of first-rate leaders is now growing up, especially within the ranks of the Sierra Club. The North Palisade may be cited as an illustration of the changed point of view. Once considered accessible only by a single 'difficult' route, it has in the past few years been climbed, within the limits of safe mountaineering, by half a dozen different routes and by comparative novices. In this connection it should be observed that there are no climbing guides in the Sierra; 'guides,' as known in the mountains of California, are not easily separated from their horses. As for access, the motor car and good roads have brought it about that spots once considered remote are now reached in one day from San Francisco and Los Angeles. For instance, not so many years ago the ascent of Mt. Whitney could hardly be made inside of a week's trip; to-day it can be done on a week-end from Los Angeles. Tuolumne Meadows, formerly two days' journey from San Francisco, can now be reached in 8 hours.

The climbing centres of the Sierra may be attained, as has already been indicated, from either the western or the eastern side of the range. Information about the main avenues of

approach is so easily obtained when required that it seems unnecessary to give it here. Only one road crosses the entire range in the mountain-climbing region—the Tioga Road, through Yosemite National Park. This gives quick access to the peaks of the Tuolumne country. Southward, there is no transmountain road until one comes to Walker Pass, well beyond the territory of the mountaineer. On the E. the ends of the automobile roads are usually far up the canyons, and from many of these points it is possible to climb a high peak and return to the car in a single day. Much of the enjoyment is lost, however, by such a *tour de force*, and one should be prepared to cut the cords of communication with the outside world when entering upon a series of climbs. If one approaches the mountains from the W. it will take a little longer to reach the climbing bases, but the longer journey is abundantly compensated for by the delights of the trail. One walks or rides for a day or two through majestic forests of pine, fir, and sequoia, through mountain-meadows bright with flowers, by splashing cascades and lakes of clearest water, in view of enormous expanses of glacier-polished granite.

Several methods are offered the climber for maintaining himself in the field of his activities. Members of the Sierra Club conduct annually, in July, an outing of four weeks, which affords the very best opportunities for climbing. Members of other mountaineering organizations are always cordially welcomed on these outings. By this means preparation and expense are reduced to a minimum. In some localities there are public 'camps' or 'lodges,' to which one may walk, or ride on horseback, in an easy day from the motor terminus. Accommodation is simple, but clean and sufficient, and the climber need bring with him nothing but his personal effects. Camps of this character are now maintained at several points in Yosemite National Park, particularly in the upper Merced and at Tuolumne Meadows, as well as at the head of Big Pine Creek near the E. base of the Palisades, and on Lone Pine Creek near the E. base of Mt. Whitney. Others will doubtless be developed in the near future as the demand increases. For more remote fields, and for greater variety, one must resort to 'camping out,' of which there are all degrees: from 'back-packing,' with bed and provisions on one's own back, to luxurious 'pack trips,' with horses and mules, packers and cooks, and all the paraphernalia one's purse affords. Intermediate, and perhaps best suited to the mountaineer whose primary object is climbing, is the small party—three or four—on foot, with horses, mules,

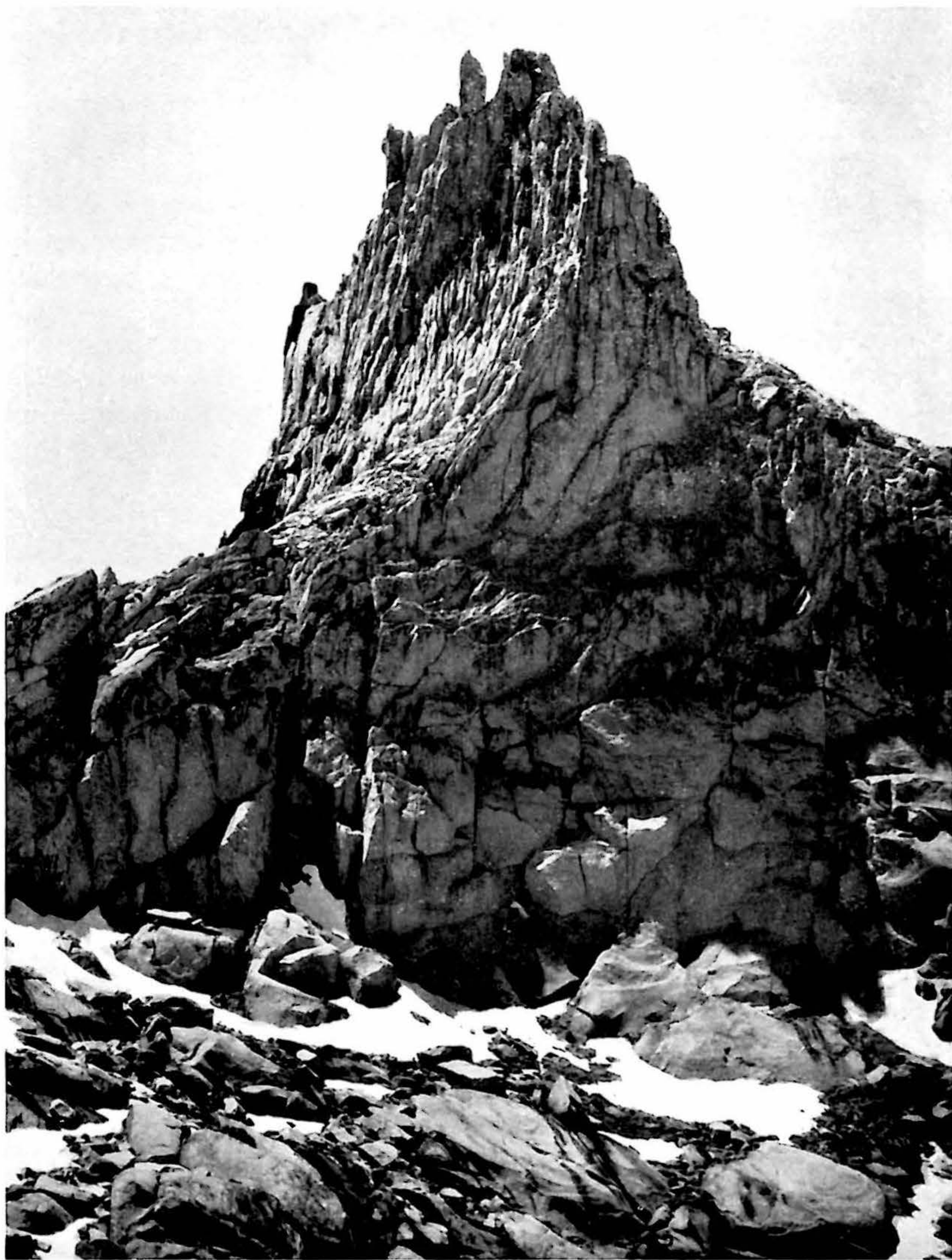
or burros (donkeys) to bear the burdens. It is particularly fortunate from the climbers' point of view if one of the party prefers fishing to climbing. Add another member who likes to cook, and the party is complete. Pack trips may be migratory, covering a great deal of territory, or they may be spasmodic, moving only when new pastures call. In earlier days the packing of supplies and equipment to the base of a peak was often a greater feat than the actual ascent, but to-day excellent trails cover practically every section of the Sierra and the contour maps of the U.S. Geological Survey reflect the topography with remarkable precision. There still remain, however, some spots so inaccessible that they can be reached only by arduous back-packing. To enjoy to the utmost the pleasures of mountaineering in the High Sierra one should search out such a spot and establish a primitive bivouac—high on some granite shelf with a little stream near by, or at the margin of a little lake with tufted 'short-hair' grass all around and the aromatic white-bark pine for fuel.

The peaks of the Sierra Nevada, because of the height of their bases, do not, as a rule, stand out as separate mountain masses comparable to those of the Alps or the Canadian Rockies. Nevertheless, they have a markedly individual character. There are, for instance, the 'black' peaks—Ritter, Black Giant, Black Kaweah; the 'red' peaks—Dana, Red Slate, Cardinal, Red Kaweah; and the 'white' peaks—Conness, Abbot, Tyndall, Whitney. There are crags and pinnacles, such as the Minarets, Devils Crags, Ericsson, Sawtooth Ridge; and 'domes,' such as Starr King, Half Dome, Kettle Dome, Tehipite. There are big, well-proportioned mountains, such as Brewer, Arrow Peak, Goddard; and peaks of unusual shape, sometimes fantastic—Cathedral, Unicorn, Cockscomb, Seven Gables, Table Mountain, Milestone. There are big mountains easy to climb, there are little mountains hard to climb, and there are easy mountains with difficult sides.

The fascination of 'round figures' which leads to the making of lists of peaks of over 4000 metres, or over 14,000 ft., in altitude, finds a field for expression in the Sierra. Of the 60 to 65 peaks in the United States of 14,000 ft. or over, eleven are in the Sierra Nevada. In order, from N. to S., they are:

Palisade group: North Palisade, 14,254; Sill, 14,100 (approx.); Middle Palisade, 14,049; Split Mountain (South Palisade), 14,051.

Tyndall group: Williamson, 14,384; Tyndall, 14,025;



Photo, Ansel Adams.]

COCKSCOMB, YOSEMITE NATIONAL PARK.

[To face p. 94.



Photo, Ansel Adams.]

HALF DOME, YOSEMITE VALLEY, AND TENAYA CANYON.

Barnard, 14,003. (A subordinate eastern point of Williamson is also sometimes listed.)

Whitney group : Russell, 14,190 ; Whitney, 14,496 ; Muir, 14,025 ; Langley (also known as False Mt. Whitney, Sheep Mountain, or Corcoran), 14,042.

Incidentally, of the remaining peaks in the list two others are in California (Shasta, 14,162, and White Mountain, 14,242), one is in the State of Washington (Rainier, 14,408), and all the others are in the Rocky Mountains of Colorado. The altitudes in some instances, notably Whitney, Rainier, and Shasta, have been determined by very careful measurements ; others are subject to slight correction, so that the list cannot be accepted as final.⁵

Mere altitude, however, is not the primary consideration of mountain-climbers. Mt. Whitney, notwithstanding that it is the highest peak in the United States (exclusive of Alaska), is one of the easiest to climb. In fact, a well-built trail permits riding on horseback to the very summit. On the other hand, there are interesting routes on Whitney, especially the E. face.⁶ Muir is a mere scramble of a few minutes from the Whitney trail and can scarcely be classed as a separate mountain ascent ; but near by are pinnacles and ridges, many of them nameless, which offer the severest test of the climber's skill. Russell, just N. of Whitney, presents a number of attractive climbs ; Barnard and Tyndall have little to offer besides altitude and view. Williamson's big bulk is a trial of endurance if assailed from the E., but a fair climb from the W.

The Kern River region, which embraces the Whitney group, is one of the best centres for climbing. In addition to the peaks already mentioned there are the Kaweahs and the peaks of the Kings-Kern divide. Mt. Kaweah and Red Kaweah are easy climbs. The Black Kaweah, however, is more difficult and is not to be dealt with lightly. Milestone, Table Mountain, Ericsson, and Stanford offer almost unlimited opportunities for exploring new and difficult routes.

The view from Brewer, a handsome peak just N. of the Kings-Kern divide, is regarded as one of the finest in the Sierra.

⁵ *Sierra Club Bulletin*, 1929, xiv : 1, p. 53 (Mt. Whitney) ; *S.C.B.* 1926, xii : 3, p. 259 (Mt. Shasta) ; Edmond S. Meany : *Mount Rainier, a Record of Exploration*, N.Y., 1916, p. 297 ; John L. Jerome Hart, *Fourteen Thousand Feet*, Denver, 1931 (Colorado Rockies).

⁶ *S.C.B.* 1932, xvii : 1, p. 53.

One is tempted to linger on its summit until late in the afternoon, watching the shadows deepening in the canyons far below. At the head of the South Fork of Kings River stand a number of peaks of varied character, most of which have no special attractions for the climber. Among them, however, are two exceptions, King and Gardiner, which are worthy of more attention than they have yet received.

Progressing northward to the Middle Fork of Kings River we come again to a region where first-class mountaineering abounds. Here are the Palisades and Devils Crag, not to mention many other fine climbs. North Palisade and Middle Palisade are the dominant points on a 5-mile section of the main crest that provides an inexhaustible field for the climber's ingenuity. The granite is firm and clean, with sharply defined cleavage lines which produce slabs of every variety of size, shape, and angle. On the E. side are the glaciers, small indeed by most standards, but nevertheless a real attraction for the climber. On the W. are the grandest and wildest canyons of the range. The views during the ascent of the Palisades and the panoramas from their summits are extremely spectacular and grand. If one were to single out any one region of the Sierra as the special paradise of the rock-climbing mountaineer it must surely be the Palisades.⁷ The Devils Crag offer a number of fine climbs in a very concentrated field. The climbs are short, fairly difficult, and there are many untried routes which promise the maximum of interest within the limits of sound practice.

The main crest of the Sierra is by no means a straight line. It is, rather, a series of lines in echelon. The line of the Palisades, if projected toward the N., would extend into the Owens Valley, but, as it is, the crest at this point turns W. irregularly for a few miles until a new N. and S. line is formed with Darwin and Humphreys as the prominent peaks. Darwin is a massive, flat-topped mountain with steep sides and an remarkable feature in that its highest point is the top of an isolated pillar standing a little way off from the main mass. Humphreys is a very impressive peak viewed from any direction, and ranks as one of the best in the Sierra for interesting climbs. Other peaks at the headwaters of the San Joaquin worthy of notice are Bear Creek Spire, Seven Gables, Abbot, Mills, and

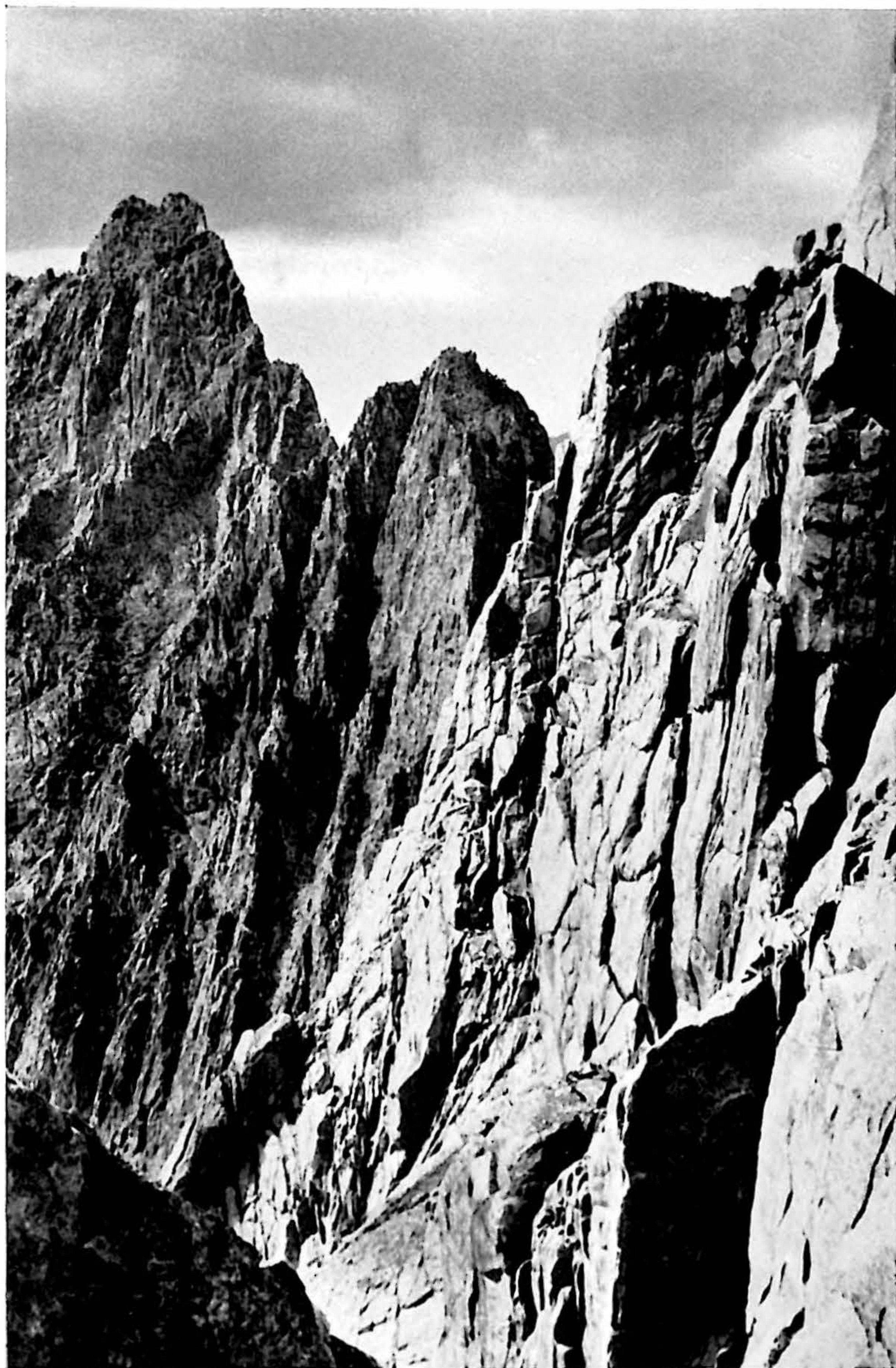
⁷ *S.C.B.* 1904, v: 1, p. 1; 1922, xi: 3, p. 264; 1929, xiv: 1, p. 58; 1932, xvii: 1, p. 124. Also *American Alpine Journal*, 1930, i: 2, p. 186; 1931, i: 3, p. 395.



Photo, Ansel Adams.]

GRANITE CLIFFS OF THE KAWEAH.

[To face p. 96.]



Photo, Marjory Bridge.]

CREST OF MIDDLE PALISADE.
(Typical of High Sierra Rock Structure.)

Red-and-White. Seven Gables, although an easy climb, has a particularly comprehensive view.

Between the Middle and the North forks of the San Joaquin, in an unusual position in relation to the main crest, stands the Ritter group—the Minarets, Ritter, and Banner. The Minarets are not very high and the climbs are short—not more than a thousand feet of difficult work—but they provide very fine sport. Ritter and Banner are both easy climbs, excepting the E. face of Banner, which is quite first class.

Entering now the Yosemite National Park, we come to the peaks at the headwaters of the Merced and the Tuolumne. Many of these peaks are remarkable for the beauty of their form, but scarcely any of them are difficult of ascent. Lyell and Maclure, easily reached over a snow-covered glacier from the N.W., provide good sport on the steep southern side. The Unicorn-Cathedral group is a delightful field for short climbs with a few difficult steps. Clark, easily ascended by the orthodox route, nevertheless offers some very fine ridges and precipitous faces. On the northern boundary of the park, easily accessible from the Mono highway, are Sawtooth Ridge and the Finger Peaks, recently discovered as an exceptionally fine group for the practice of difficult rock-climbing.

Yosemite Valley itself is unique as a climbing centre. Sheer walls like El Capitan and the cliffs on either side of the Upper Yosemite Fall are, of course, not to be considered. Not even the most exaggerated development of rope-and-piton engineering could prevail against those stupendous vertical faces. But there are other sections of the Yosemite walls of a more accommodating nature, and there are a number of spectacular pinnacles, some not yet scaled, which are legitimate goals for climbers advanced in the technique of the rope. Towering above Yosemite Valley is Half Dome, easily climbed by means of a cable threaded on large pitons, barely climbable by friction over the same route (it is folly to attempt it without belays), but by any other route as yet unscaled. Not far away stands Starr King, another dome whose smooth sides are just within the limits of human prehensile ability.⁸ The Yosemite, as a field for real mountaineering, is soon exhausted, but as a practice ground it is admirable, especially because of its accessibility and good accommodation.

This review of the principal climbing centres of the Sierra Nevada is necessarily far from complete, for the mere

⁸ *S.C.B.* 1932, xvii: 1, p. 115.

enumeration of all the good climbs would crowd out all else from the space allotted. Two characteristic features should, however, be mentioned in addition to the ground already covered. These are the great 'buttress' mountains which stand just eastward from the main crest, and the granite gorges which offer problems of interest and difficulty equal to those of mountain peaks. The buttress mountains are outposts of the desert, rising in steep slopes of broken rock, furrowed by impassable barrancas, ribbed by unsurmountable ridges. Toward the top they take on more of the character of the granite peaks of the main crest. They are of little attraction to the mountaineer save as a trial of endurance. Such are Morrison, Tom, and Birch Mountain. Williamson is of similar character, although its close connection with the main crest on the W. gives it a different aspect from that side. The gorges referred to are best exemplified by Tenaya Canyon and by Muir Gorge in Tuolumne Canyon. The former has many of the attractions of a first-class mountain climb; the latter is remarkable in that it requires more swimming than climbing for its passage.⁹

In the Sierra Nevada, as elsewhere, the enjoyment of climbing is greatly enhanced by an acquaintance with the principal features of the geology, the natural history, and the human history of the region. There is no single work in which the geology of the Sierra is adequately treated, for no systematic intensive study of the entire range has yet been completed, although certain sections have been the subject of voluminous reports, notably the gold regions and Yosemite Valley. Outstanding among these reports is François E. Matthes' 'Geologic History of the Yosemite Valley.' Although primarily concerned with Yosemite, it also contains a great deal of information about the High Sierra. Others who have made important contributions to the knowledge of Sierra Nevada geology are: Eliot Blackwelder, Ernst Cloos, Hans Cloos, G. K. Gilbert, W. D. Johnson, Adolph Knopf, A. C. Lawson, Joseph LeConte, Waldemar Lindgren, F. L. Ransome, I. C. Russell, H. W. Turner.¹⁰ The publications of the Whitney Survey have a certain historical value, although for furnishing reliable information they are long since out of date.

⁹ *S.C.B.* 1910, vii : 3, p. 153 ; and 1914, ix : 3, p. 126 (Tenaya Canyon) ; 1932, xvii : 1, p. 82 (Muir Gorge).

¹⁰ For specific reference, see Shedd, Solon : 'Bibliography of the Geology and Mineral Resources of California,' *Bulletin*, No. 104, California State Division of Mines, San Francisco, 1932.

The trees and the flowers are among the chief glories of the Sierra, delighting the traveller at every turn. Famous above all other forest trees of the world is the Big Tree (*Sequoia gigantea*).¹¹ Although its magnitude is almost unbelievable, mere size is not its sole claim to attention. The fine proportions and rich colouring of its trunk, the delicate tracery of its foliage, and the remarkable characteristics of its growth combine to make it a subject for continued study and admiration. Of almost equal grandeur and of even greater beauty is the Sugar Pine (*Pinus lambertiana*). At higher altitudes are other interesting trees of a different character—the Juniper (*Juniperus occidentalis*), the Foxtail Pine (*Pinus balfouriana*), and the White-bark Pine (*Pinus albicaulis*). Wild flowers are to be seen everywhere throughout the mountains. Mariposa Lily, Leopard Lily, Columbine, Delphinium, Castilleia, Mimulus, Bryanthus, Cassiope, Sierra Primrose, Polemonium—what brilliant colours, what exquisite shapes these names summon to the mind's eye!

Of the birds of the Sierra three deserve special mention—the Water Ouzel or American Dipper (*Cinclus mexicanus unicolor*), immortalized in John Muir's 'The Mountains of California'; the Rosy Finch (*Leucosticte tephrocotis dawsoni*), companion of the mountain-climber on even the highest peaks; and the raucous-voiced Clark Nutcracker (*Nucifraga columbiana*). Excepting the Mule Deer and the common Black Bear, the larger animals are not abundant in the Sierra. There was a time when the California Grizzly, noblest of American quadrupeds, stalked the forests, but the last of his tribe has long since been slain and he survives only in the sagas of heroic days. The Mountain Sheep, the famous Bighorn, has very nearly met the same fate, for only a few scanty bands remain in certain inaccessible parts of the eastern slope. There never have been mountain goats in the Sierra. The Wolverine is still found, though rarely; the Mountain Lion (Cougar, or Puma) is present but seldom seen; the Coyote is quite common in certain districts. The animals most frequently encountered are the smaller folk—the squirrels, chipmunks, ground squirrels, marmots, conies, and jack rabbits.

If there is any mountain range in the world in which fishing

¹¹ This name, given by Decaisne in 1854, is now generally accepted by American botanists as an exception to the standard rules of nomenclature. Other binomials used for this species are *Sequoia wellingtonia* and *Sequoia washingtonia*.

and mountain-climbing may be considered to be two branches of one sport, it is the Sierra Nevada. Moreover, it is sometimes difficult to decide which is the major branch. Many a man has gone forth to climb a mountain and has returned with a fine string of trout. On the other hand, I actually started out once for a day's fishing and found myself on top of Mt. Clark with a flyrod in my rucksack. Suffice it to say, the Rainbow Trout (*Salmo irideus*) and the Golden Trout (*Salmo roosevelti*) are a temptation more readily yielded to than resisted.

I shall not attempt to review here the history of the exploration of the Sierra Nevada and the conquest of its peaks, for I have done that elsewhere, but I would like to say a few words about the literature of the region. Greatest of all writers who have described the Sierra is John Muir. For many years he lived in close communion with Yosemite and the High Sierra. Ardent student of every aspect of Nature, his devotion gave him a remarkable insight into her processes. In his younger days he was an intrepid mountaineer, though caring not a penny for the record of peaks climbed. One finds in his books the spirit of the Sierra in its most exalted expression, whether in the joyous descriptions of the forests, the flowers, the lakes, the snow, and the granite uplands, or in the eager search for truth in the examination of glacial phenomena, or in the thrilling narratives of adventurous scrambles beside waterfalls, through canyons, and to the summits of sharp peaks.

Next in fame comes Clarence King. His 'Mountaineering in the Sierra Nevada' is indeed an ornament of American literature, albeit somewhat overrated as a description of the actual scene. Some portions of it must be regarded as fiction, as, for instance, 'Kaweah's Ride,' and, although the mountain-climbing episodes actually occurred, several grains of salt are necessary for their digestion in the form presented. His failures on such easy mountains as Whitney are almost as difficult to account for as are the achievements that he describes. It is said that when a friend once intimated that his story of the slopes of Mount Tyndall might seem pretty steep to an unimaginative reader, King 'offered to throw off five degrees for a flat acceptance, or, otherwise to conduct him personally to the not easily accessible scene of the extraordinary adventure.' Alas, those of us who have since visited the scene will demand more than five degrees!

For the past forty years the pages of the 'Sierra Club Bulletin' have included most of what has been written about actual climbing in the Sierra Nevada. Here will be found recorded

the exploits of Joseph N. LeConte, Bolton Coit Brown, James S. Hutchinson, Theodore S. Solomons, and a number of others who have come into the field more recently. Outstanding among the last is Norman Clyde, who has unquestionably climbed far more peaks in the Sierra than any other individual. His scattered publications, if brought together in one book, might well be entitled 'Super-Mountaineering in the Sierra Nevada.'

Of the poetry of the Sierra there is little to be said. To forestall a question about Joaquin Miller, the so-called 'Poet of the Sierras,' I hasten to remark that his poems have nothing to do with the High Sierra, if, indeed, they can be said to belong to the Sierra at all. The Yosemite has inspired many poets to write verses, but as yet very little outstanding poetry has appeared. Let us return, then, to the writings of John Muir and close this discourse with his words of praise :

'Then it seemed to me the Sierra should be called not the Nevada, or Snowy Range, but the Range of Light. And after ten years spent in the heart of it, rejoicing and wondering, bathing in its glorious floods of light, seeing the sunbursts of morning among the icy peaks, the noonday radiance on the trees and rocks and snow, the flush of the alpenglow, and a thousand dashing waterfalls with their marvellous abundance of irised spray, it still seems to me above all others the Range of Light, the most divinely beautiful of all mountain-chains I have ever seen.'

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Editor, 'A.J.']

LESSONS FROM THE MOUNT EVEREST EXPEDITION OF 1933.

By T. G. LONGSTAFF.

SINCE I appear to have a worse superiority complex than any other member of the Club it is suggested that discussion of, and conclusions on, the lessons to be learned from the last Everest expedition will best be stimulated by making me the devil's advocate. To this end I am impelled to assume