Mexico

F. P. HOECK.—MEXICO.

Popocatapetl—Popocatpetl

[Signature]

[Date]

[Other notes]
Feb 21st

Preparations completed for going to the Volcano of Bois Tepoztle — my guide is an Indian named Semy Bemby.

Bought sitting, leather for sandals to be used on our first in ascending the mountain. Descending the clouds came swelling up in tumultuous rolling gray over the peak, a glowing silvery cloud — illuminated. Was only partly concealed by broken drifts left from the snow that had fallen about it all day. At the rim must have

...
clear + dead white with
the cliffs + wooded ridges
of the bare already blighting in
the bleakness of night.
The clouds jet black
and turbulent brown
in the winding rivers
with the new wheat springs
up.

Early in the evening fitful flashes of lightning were seen
among the clouds race
over the mountain summits and
soon after 9 P.M. a heavy
shower drenched fell pelting
on hour or more; flooding
the creek by the steady rush
of drops on the tiles.

July 21 1899

Up before sunrise to find
the sky brilliantly clear +
the only trace of the storm
Braving up, her skirts up to her knees, we started to climb the high peaks of the mountainous range. 

As we reached our destination, we found ourselves surrounded by the coolness of the mountain air. 

It was nearing nine when we set off for the next climb on the mountain. 

We made steady progress, our small band of companions still small but strong.

For the first mile we turned left, walking among the stars and the soft glow of the moon.
corned with shingles pegged
to the strips like roof kat
three inches at Makatipin.
Many gates were also goat
in gable shaped or double-
pitched, shingled corn.

From the town we took an
almost nowhere course
for several miles around
a little slope across side
fields of wheat now some corn
in hill.
American four-wheeled trolley
also evidently been used here.
In a few places men and boys
are at work planting corn.
The soil is a thin sandy loam
made up partly of volcanic
ashes so light that every
breeze carries the dust into
the air & several tall dust
columns win marching in
Stately procession across
the fields as we passed——

Finaly reached the foot
of the incline, showing in places
through the accumulations of
leaves, the sharp slopes
of snowy caps of Precipices
and three peaks rising in
massive outline. Before
soon an extent of wild growth
of bushes among which large
willows, cherries within small
trees were overshadowed by
large pines of several species
of Willi and Fir.

On down through the
shallows there are shrubs
with many wild flowers,

Some species of plants
now in flower from 3,000 ft.
1,500 ft. among which the large
mellow, cherry, lupine - are more conspicuous.
At about 10,600 ft. Figura and a large grove of yellow wildflowers were in full bloom.
At about 10,500 ft. the first clear gite attempt. It had a species of pine with scottish blue alder. It formed an open grove with little or no undergrowth. The Vaccaro grove being where in this upper belt with the open fields like characters of the broad slope giving a pleasant appearance to the landscape.
To the north the rugged slope of the Adramite. Through the cloudy weather the snowy peaks and the sky made irregular intervals when
a fleeting gust of wind would blow. At noon we reached an altitude of about 11,000 ft. We left the trail and going down the steep side of the mountain we found a rock shelter facing the north. The rocks were dark-colored and the Indian hunters told me that this place was used by Indians as a camping place. Several cattle were found grazing on the hill near this place. I decided to camp here for several nights to hunt the horses back to town in company with the Indian hunters preparatory to see what term is born in the way of animal life. A small creek runs through...
Our rock shelter was a haven of dry branches on the ground, offering the comforts of the boughs while one could look through the pine tops bordering the shelter wall of the Canyons.

Auntie's brother, Thomas A. Bugbee, brought us fresh kachina dolls for the principal birds seen until we reached the base of the mountain. Upon returning, we saw the crested jay, junco, blue jay, flicker, and several other species.

In the afternoon about our camp I saw quail, robin, blue jay, flicker, and several other species including the Spotted Hawk and turkey buzzard.
Feb. 2 & Rock Shelter Camp
Still in our camp under
the rock shelter.
Every morning the first sign
of dawn is a grayish hue
in the eastern sky followed
by a pale orange yellow
which gives place to a whitening
sky that precedes the immediate
rising of the sun - the first
rays of sun light touch
the high ridges tops with
warm yellow hints.
As the yellowing sky shows up
brings out in bright relief
the trilling of the robins and
calls of California cough
the singing is heard
each morning.
The fresh air soon conveys
by the warm day stand
us in turn the various
Other firsthand accounts, I asked them about their morning hunt for mallard.
The add nasal call, too, Begging multiplied as these birds trooped about in
small parties came faintly
to our ears.
Spotted hawks, Beggars
Barn, mentioned a. Pequod
Calendula ran queer commo
about this camp.
As day opens the morning
of the little stream by our
camp seemed to lose some
of the importance it seemed
during the matinee calm
of night. The rising sun
sought through the for the
and stirred with the few
fronts hanging from the hills
below opposite our camp.
July 25. Illamaacs.

According to programme I mounted crags to this place just below the glacier, close to the base of the summit of the volcano. I took several photos around 1st 2 views of northern face of mountain.
2nd 2 views from Illamaacs to cover NE face of mountain next.
3rd View to show a small glacier which lies in a gulch 3/4 back of Tamarack main run. This is the only sign I can see of a glacier on this mt. On the way up here we passed several pack trains of miles in the woods at 12,000 to 13,000 ft. Getting wood to carry to Illamaacs.
In these high winds birds were scarce but several species were noted as wintering beyond the timberline. Junco, Blue, Pygmy, Ameiophila, Caloptes, Ampelopsis, Cassius, Cathartes, Falconipes, Buteo borealis, Phalaropus. Also the large rabbit taken at the lower canyons From Arned to the base of the main peak the country is covered with a deep gray volcanic ash which becomes more and more sprinkled with pumice fragments as the two are approached. The nearer the base of the peak is approached the more...
scattering becomes the
growth of grass—the open
scattered growths of
perennial on the
as compared with others
of such altitude as no
doubt due largely to the
loose barren character
of the sandy soil.
Many years ago varieties
were said to be found
there, but from an
end to do although the
Boyole ranges up to the
limit of vegetation.
From the woods a freight
can be had of the peaks
of Malwela and Bintuma.
The latter backed by huge
curvilinear clouds
the peaks of Bintuma
in the sun with a butchered
icy sheet at midnight.
A short gray mass from 1 to 3 inches long covers the branches of many of the trees in the light of the sun's rays.

This evening a gray mass of cloud capped the mountain, following the outline of the surface like a dun gray cap from which fragments were blown and drifted slowly across the flaming star fields. The wind flicked and rustled through the canopy of pines and a stump of fir, although the temperature was not too low yet the...
notes for 7th fit

Left Las Cruces at 4:40
Reached Las Cruces 6:40
Summit 10:00 a.m.
From Summit 2 hours
To Las Cruces

Flamacas

At 11 a.m. at Summit temp. 28°
At 2 P.M., at Flamacas 67°

Wind caused us to feel
it very disagreeably.

Just after dark two indians
from Arceca who were
hunting cattle on them-
came and joined us at
the shelter of the old house
at Flamacas. One old
fellow warmed upon tea.
after eating a supper
of tortillas toasted in the
arches he settled in
until 5 turned in at
9 P.M. on a bunch corned
with groes at one end of the
room. I was soon asleep.

Mr. Popocatepetl

27th 3rd 1893

At 3 a.m. I waked the men
soon had a roaring fire
burning in the midelle of
the room - the wood which
optr of the great gale of lost in a
was still smoldering a by
the hole light the con
under the cloud gray cloud.
I could not see sub earlier across
the gleaming white sides
of the volcano above us.
The temperature was 30° at 5 a.m.

The men were slow in getting up; at 4.45 we rode out in the darkness, passing down through the black shadowy forms of the pines.

In a short time we passed along the upper pine limit and then through arazon fall to grass to the bare slope of volcanic ashes. As we descended—two points of lava known as Las Cruces—the faint saffron line of dawn showed in the east. An occasional twinkle of light in the villages of the polo valley. Ears of corn already astir down there among some 70000 to 80000 ft. below us, though the shades of
night at still hung
over them -
these mists to a halt
brought a huge snowdrift,
topped by a small wooden
cross. Here we were to
leave our horses - make
our ascent to the summit
on foot, a distance of
The wind blew coldly from
the snow above in the pale
light of dusk down the dead
bleak of the face, classical as
the snow there, sharply toward
the sky. Here a depressing
effect? Our feet were
wrapped in several thicknesses
of coarse cloth over which we
strapped common leather
saddles, about these tied
several wrappings of strong
small string, rope, to prevent
the foot from slipping.
At 10:40 A.M. we began to climb over the sandy slopes leading up to the snow. These slopes were scattered with rough outlined lava fragments belonging to the edifice of their fantastic silhouette in procession up the slope against the brightening solar disc. As we ascended the slopes became sharper, and as we came near the snow the wind came down with furious gusts to carry clouds of fine cinders and ashes with specks of snow dandruff into each other's faces. These flying particles dashed into our faces with such force that it was impossible to see.
More than lean heavily on the all-weather with bound head and wait until the fierce blast had ceased. The blinding snow-sheets were being replaced by drifting clouds of powdery snow. A single ray that then caught up from the frozen surface and whirled about the blinding cloud. The wind swept down the slope in our faces, blowing through the tiny except at short intervals when sudden sharp gusts would strike with such unexpected
force as to almost throw us back ward down the slope. In carrying the clouds of sand and particles down the slope the wind often whirled them about tossed them high up in the air as though in sport.

Meanwhile we were toiling slowly up the steep slope in single file. In front a stout alpinist guide with a spiked cut-shallow step holes in the hard snow in which each one placed his tempt carefully to use the alpenstock as a guard against a possible brush for slow move upward. Meanwhile the sun came up and opened such a beautiful view out.
Rochester north across the divide between the Nec作 whose army crossed our route to Mexico, above the snow covered summit of Pike's Peak, standing out its name showing a cold and bristling while today with black spotted, cliffy top points projecting high above.

Down below us over the valley of Pueblo dotted several beautiful cloud islands with dazzling sunlight upon face the edges showing a little under surface there held their place all the morning or seemed

over the valleys of Pueblo and Mexico. Towns on the hills in trees with brightly green wheat fields about them. Of this latter the marked objects nearest in the valley of Pueblo the various lake formed distinctly, all way to the eastward on the southern bordering hills the snow covered mountains below being a snow dome. The beautiful snow covered peak of Alpaca with background of smoky clounds.

The wind blew so cold that the exercise of climbing was not worthy to make up my mind. My lack of health forced it necessary for me to make for regret.
To count a sea of dust

The clouds were in front of the smoke, hanging at a height of the summit in

The thin ragged cloud drifted from top to top, and with its drift, and

A mile or so from the out, toward

I caught by upward column from time to

I whirled upward and scattered into gush of small fragments, they were dispersed as

We descended about noon great columns of

stops for breath but by cautioning working along with deliberate movements, and then frequent stops, I reached the summit in just three hours 50 min.

As we stepped out on the rim of the crater, the full force of the mind struck us. It chilled us thoroughly. My nerves, placed in the

I had along a joint clamp to make the about,

As I made my way, a block of ice at 11 am, registered 20° above 0, I had along a joint

ensuring effort to light the torch in the shade, sheltered by a snow bank failed to

It was the least effort to that to give it up.
dust was being raised up 1000 to 2000 ft from the plain of Biscala.

Cold gray clouds began to swirl across the crater, after a busy survey of the place in an effort to get a photo. The crater was turned back and turned our way along the line of steeps made on our way up.

The crater is oblong, longish for such to visit. In the bottom is a pool of green-sulfur-imregnated water. The sulfuric vapors come out of water at various points, the rocks from bottom to top. On crater 3 place yellow with deposited sulfur could be seen near the bottom of the crater. The place is a strange wild one worth much longer study than I could give it by such a hurried visit.
When we had descended cautiously to the base of the snow, this quadruped began to set loose little streams of snow water that were looking downstream little at a time, reaching a liquid ash that succeeded in transporting many tons of this material far down the slope daily by the Boxes. The short slope showed keeping down the ridge and lower, coarse ashes and debris of this part of the road with giant straphs in great contrast to theRachel upward march of softness.

The long hair of the Indians is remarkable. They seemed capable of moving stealthily up the steep slopes without
The cave where we made camp is the one used by the Nez Perce snow gatherers who come up here for ice from the glaciers to sell in Mex. or at various towns in the state of Montana. It is also used by cattle in bad weather to ride from elsewhere.

Ameca Feb 28

 Went to Quinata to look up Ra's place arranged for trip to Igtaeihuatla tomorrow.

Igtaeihuatla March 1

Left Ameca at 9 am with two mules and a packer very erect for this ride. The weather was clear fine. Our road proceeded in an eastly direction, winding steadily up the north slope of the mountain until at 1:30 pm we reached a cave on the hill side just at timberline. When we camped for the night I found some 1000 ft below our camp the first signs of glacier action in the form of a deep glacial valley some
500 ft deep at its lower part. It runs in a westerly course & began about 2 miles above its lower end on the west slope near South Red pass. It descends in a series of curving falls through the valley end.

On the S side is a high wall of lava, porphyry with its slopes steeper, rounded by the ice from summit to base some 500 ft. Near the upper end the west sides is bounded in the same way but near the lower it is a lateral moraine separating this valley from a much smaller glacial basin lying just to the west of
The sharp rives formed by this lateral moraine—
along the summits of the moraines are many ice-sculptures
some being gPoliticalre-polished by ice action.
Near the head of the large basin first mentioned
coming in from the N.W. are several little subsidiary basins
of from 100 to 200 yds. in length & scooped out
from 25 to 60 ft. deep.

About the mouth of all these basins many rocks are
worn polished & many bear the characteristic
parallel grooves. Striae will cut into the surface of
the hard porphyry.
The rocks about the mouth
four cases are rounded & polished in characteristic
fashion and a turbulent
muddy little stream
dashes down over the rock
post as from a small living
glacier situated about a
mile above us which we
will examine tomorrow.
Then glaciers, basins with
snow and ice, covered
out islands recall most
forcibly the hundreds of
similar steep glacial action
seen on the coast of Alaska
among the high Sierra
of California and the
mistakeable for who
has once seen them
such work.

The Sisquematal glacier moating
is not so heavy however as that seen
in the far northern regions.
At 4.30 a.m. I stirred up my men, after a spring breakfast of bread tea, and since the horses were saddled for myself, rasentante at about 5.30, just as the pale gray dawn began to show us carried out on the trail heading upward toward the lower point of the glacier. The air was very frosty. The snow and backs of the horse were packed solid, the little muddy, glacial stream won ground into the thick coating ice. A chilling wind came down from the snowy heights and added to the discomfort of the trip. After scrambling up the rocky trail...
Sometimes riding, sometimes walking. For an hour or so finally came to the foot of the glacier. There was note from the top of the mountain as possibly being a glacier. Such it proved to be.

With well-marked lateral moraines converging toward the foot, below the present site of the diminished ice sheet.

Leaving our horses near our sandals were strapped on with four turns of strong small haircrape about the ball of each foot to prevent slipping. Then the senior business of the ascent began. One guide carried an ax and went on in front while the other with an alpenstock and a strong lariat followed.

Myself and companion each with an iron forged alpenstock followed. For an hour we toiled slowly up the slope of the moraine to the right of the
foot of the glaciers over great masses of reddish parahydrate which formed the ridge. Many were large. Boulders of granite were ground or polished on one side by the act of ice during their journey down the mountain slope. At 7:30 when the sun began shining over the southern end of the glacier the warmest air was a little we reached the upper end of the exposed slope, began our advance up the ice slope. Scattered over the lower surface of the glaciers were many fragments of rock some of considerable size. All journeying slowly down to be deposited in the small semicircular ridge. Fragments that lay at the extreme foot of the ice foot.

Very soon after starting out on the surface of the glaciers it became evident that the sun had
At first as we worked out upon the surface of the ice I saw long lines of 
marks in the surface of the ice leading from a high pointy pile of rock to 
at the summit which overlooked the glacier. These marks showed that as coming to 
2000 or more ft from the ledge, when our 
path crossed their course they must have 
atained a cannonball like speed 
each time they struck the ice they 
would soon a deep mark and make another prodigious bound to 
300 or until they joined hundreds 
of their fellow fur below. 
All of the marks I examined seemed to 
have been made the day before which 
was much warmer than is lay we saw none fail I judged that we owed it to 
the proximity of the sun that held the rocks in 
place. However, I kept a wary eye upon the 
cracks above us until we soon would cross the range of its 
missiles.
the mists were depths of icy channels seen even more glistening than they would otherwise rise to. Fragments of ice broke from the edges could be heard dropping & sounding up a faint tinkling meditation from the immense depths that were certainly 100 or more feet deep in most places on the main ice sheet. Many of these channels were bridged by half icy snow across which we passed cautiously but the open channels had to be rounded and then a long series of steps cut down diagonally up the steep slope above it until the next channel was encountered and a new change of course required. Hour after hour was passed in this manner until at 12:30 P.M. after 5 hours of
hard-work we now still below
the top of the ridge at the head of
the glaciers & among a series
of the largest crevasses which
yet encountered.
Here too the slopes of ice became
so extremely abrupt that it required
the utmost care to avoid losing
one's footing. This was made
especially necessary from the fact
that some 20 yards below us
appeared an unusually large
deep crevasse. In following the
line of niches cut in the ice
of this crevasse I could touch
the ice slope with my outstretched
right hand with only a slight
inclination of the body while careful
advancing from one step to the
other. Below the slope seemed
to drop with even greater abruptness
into the high cliff that waited
with wide jaws of certain death.
We had made about 100 yds. in an hour on this slope.

To the first who made a misstep, when in the middle of this trying position my two guides lost their confidence and stopped, I had said several prayers to the Virgin of Guadalupe, the patroness of all Mexicans. When they tried to get me to turn back saying that we could not get to the top for there were some very bad cascades ahead, and I could see how bad the grade was becoming. From where we stood, it was evident that the grade began a little easier a short distance above so called their attention and told them they must go ahead that far. They went on after this until we came to another bad place. It overhung another cascade and then one of the men stopped in a
half hysterical tone said: "I'm all well."

I laughed at this moment, started on a few yards ahead, whereupon the guides came in to take the lead again. I was forced to take the lead again for a short distance. In this manner, at 2 P.M. after being on the edge for 60

hours, I reached the main ridge of the mountain. I could see Fort de la Mora, but we were still some 1000 ft. below the main summit, from which an easy slope led down to the fort. The wind with masses of

ragged, gray clouds was streaming across the ridge. There on the rock and the snow softened by the sun in the morning now
Began to get crisp under foot. My men called my attention to this and urged that we hasten our return since we could not possibly keep our footing in soft sandals if the ice should freeze hard on the steep slopes we must descend.

Seeing the wisdom of this I was forced to give up gaining the extreme summit which another hour's work would have given. We took a hasty survey of the summit about 5 after taking several photographs showing the broken masses of snow which hung at the borders of the summit. We started down. Capping the summit with a broken face showing a clean section of snow that must be nearly 100 ft thick. This lies at the border of the cliff forming the sentinel-like upper
right hand border of the glacier looking up. This snow could be seen to be in part where it was a foot or more in the crevasses divided by slaty bands. It is evident that, showing the compacted thickness of the annual summer snow fall in each season with the thin layer of dusty stained snow which forms the succeeding dry season of winter. On the Eastern side of the Summit I saw photographed a magnificent plumed and curved section of snow which lies dominating the plain of Puebla in fellowship with the clouds. For several days numerous fires have been blazing on the gorge slopes of the river to the Valley of Mexico and as I climbed up it was almost impossible to make out any details in the plain for the
widespread film of smoke. At one start from some 15,000 ft.
the sky had a somewhat hazy, grayish appearance from this but when we
reached about 16,000 ft. we were
at the upper limit of the smoke
and the sky thence on until we descended again into the
smoke was of the most brilliant
turquoise blue I have ever seen.
Looking from the summit down toward the valley of the
Valle-y the surrounding hills could
be seen as dim outlines over the
bottom through still but
murky water.
To gain still more the semblance of water to this earthy film
its upper surface seemed
to be very sharply limited and
out on this smoky sea
flotted a mass of cumulus
cloud as clear as brilliant as
as the snowly dome of our
mountain in the brilliant
sunlight on its upper surface.
As we ascended so to see the
under surface of this cloud
island its lower surface stood
leader and gloomy as it fitted
the face behind in the murky
vapors of earth.
As we started to decend a pair
of ravens alighted on the precipice
point of rocks near the summit at
at least 16,000 ft. elevation and
crossed diurnally at 2 o'clock
the manner of it was, while
we make out painful way along
some particular, happening and
finally we abandoned the court of
had followed in ascending as
being too dangerous & finally by
cutting a series of new steps one
half mile or so in length we
reached the Motaine on the NW
side of the glacier & a little before dinnin' at the foot of the moraine after being over 10 hours on the ice. At about 16,000 ft. A yellow butterfly (one of the cabbage butterfly) was seen flying toward the summit against the wind or another was found lying dead partly imbedded in the ice. Near the same point a maggot-like fly was seen standing on the ice in nearly frozen with the cold. Another butterfly - a small reddish brown species was seen at about 16,000 ft. also heading for the summit against the wind.

Beyond timberline at the foot of the glacier a couple of sparrow hawks were seen perched on jutting crags at about 14,500 ft. & at an equal altitude a small flock of ptarmigans.
was hopping and gliding along a hillside uttering low call notes. A pair of Jones was also seen. In the loose sandy soil from timberline to the foot of the glaciers the tracks of a small rabbit were many. Numerous, the animal is evidently common there though I saw none. This is our small rabbit which my men told me of while I was on Dipper. Claiming that they were found high up on the mountain. Several plants were taken at timber line, a number of specics extend up to the foot of the glaciers, with the Etchings getting somewhat higher on exposed rocks.

On our way down in the sun I saw several cattle only about 100 ft. below the glaciers and hence down to the border of the pines.
other mammals like short-cropped grass trails leading to the water showed that they are accustomed to graze at this altitude (between 14,000 and 15,000 ft).

A small cedar growing only from ½ to 2 ft. high extends from the upper part of the fir to at least 20,000 ft. above timber. The White-footed mouse (Citellus leucopus) and a Rodentia range a little above timber line while a Yosemite get up at least to the 8,000 foot limit of the pines. Coyotes wander about up to the snow limit. A Cathartes aura reaches at least as high according to my guide. I saw several others above the timber line both on Pesh. but none above it.
The pass between Pop. 20. is crossed by a well worn trail over which has passed a strange series of persons. For centuries it has served for the road of the Indians from Puebla to Mexico on the east. The Valley of Mex. on the west. Then Cortez passed over it with his mother following. The valley of the Valley of False who sieged the opportunity to take vengeance on their enemies in the valley of Mex. Then came the wars of the independence when the guerrilla warfare was carried on by both sides. This was followed by the passage of the Americans under Scott marching from Chihuahua into the Valley of Mex. which they brought the
projected they seem nearly to close.

Then this highway question was used again during the French invasion.

Looking down on this pass and the beautiful valleys upon either side one can see the majestic mountains silent witnesses of one of the most romantic histories in the annals of the world—all written in blood from that day when the eagle tearing the snake in his talons perched on the cactus and gave a home and an emblem to the Aztecs. Both the home and the emblem are still theirs but the people are not now the rulers or masters of their country—since the day
When Gustasotojic died the death of a noble patriot in defense of the sacred duties of the temples of Inochitlan.

Every year, during the winter months, while storms are common frequent these noble mountains with their pure white summits shine forth in majestic beauty over all the surrounding region. During the summer season they are cloud wrapped for months withdrawn from the gaze of mankind as in mystic retirement and even when close by their presence call not on suspected. Thus for months until some October day the Clouds fade and drift away and they shine forth in the added lustre of the new year.
Snow Drummer.

Death indeed must be the soul of anyone who can look for the first time upon those noble mountains and not feel stir within him a emotion of awe or revelation of something like worship.

To the lower nature it is something beyond the faint effort of man and no pealing organ note in the gloomy grandeur of the mighty sheet of water can awaken such intense exaltation of the noble side of one's nature.

It is a mighty aspect of nature made solid in stone raised aloft for the contemplation of the mind. Each to his mind is attuned to fulfill its meaning.
July 27.

After returning to our camp last night all of us found that the glare of the sun on the white surface of the ice at midday had affected our eyes so that they were much inflamed. All night long we kept half wet in the icy water reported but in the morning my aunt, myself and several others almost deprived of sight. The rising sun made the inflamed membranes extremely painful so I gave up doing anything on the ice; my getting on my horse was to be back to Anceca, being able to keep the road by opening the lids a very little at intervals.

At about noon we reached Anceca and at once got into darkness to one of applied cold...
FEB 28th 1861

But in the time trying to recover from the snow blindness resulting from the last 100 mile trip on the last named day very much better.
The spur of Rop. дл.
is about 15 ft. broad
t 40 m. long
running N. 10° W.

4.300
- 3.14 = 1.16
12900
1325
14225
Snow in July 4,500 m.
La Cruz 4,300 metros 13.975
Limit Veget. 4,180 " 13.585
" Flores 3,980 " 12.950
Llamacas 3,897 " 12.690

Eruptions 1519, 1530, 1845, 1542, 1642, 1664, 1802
Earthquakes about volcano
1653 Houses thrown down in May
1667 " " " Dutchman
1682
1698 " " " " " "
1754 " " " " " "
1864 " " " " " "

Vol. I Boletin Soc. Geografica has many articles
Vol. VI Notes on Exp. to Pop. 1892
Smyth Barraza February 1907 has notes on same.

Popocatepeti
Limit Vegetation east 4,180 m.
" Flores 2,980 m. 3980
Limit Veg. on west 3,845

The plants noted above the
poles by gros and gersh (1833)

On Chelone gentianoides
Amaryllis minuta
Phacelia
Castilleja
Lupinus vaginatus
Ritae odoratum
Armenia bupoides

Sonntaq gives in Smith. Cont. Highest peak Pop. 1976
92 Oct. 19076
Altitudes on Popocatapetl

Plaza de Anua 7,507 ft. Sonneschmidt
Rancho Flamacas 3,899 ft. Sonntag
Limit lines 5,523 ft. Volcan 3,639 ft. Sonneschmidt
5,523 ft. Glennie
of Vegetation 5,523 ft. Sonntag
Pic del Fraile 5,004 ft. Sonneschmidt
Sonntagguers alt. 5,472.5 ft. (17,800 ft.)
5,246 ft.
5,241 ft.
Main alt. given by
5,475 ft. diff. obs. for Pop.

From lowest point of crater rim to summit of cone is 4,811 ft.
Alt. peak 17,816 ft.
Iztaccihuatl 17,207 ft. Sonntag

The volcano sand of Pop. is a fine pumice gravelly lava pumice.

Crater of Volcano 800-900 long by 750 meters wide.

Temperature on Pop.
8 pm, April 20, 1887, 52° Cent. Glennie

Bottom of crater in Cañada del Muerto 2,720 ft. Sonntag

5,207 ft.
5,156 ft.
5,120 ft.
5,023 ft.
5,072 ft.
5,030 ft.
1891 June 1st

Women worked for 6 hours. One day's wages is 10. Cents. 10. Cents to earn 50. Cents. 1550 lbs. sulphur daily.

Note on Herr Magrath's mine by Baron Von Muller's notes on Popocat. Ty Santog

Smithsonian Cont. to Knowledge.
Plants from Mt. Biscoeaptal
taken July 27 1893

1. Pines from 1000 to timberline
2. Composite to max. limit of flower plants
3. " 8800 to 12,500 ft.
4. Evergreen from 9000 to 11,000 ft.
5. Composite 8800 to 10,000
6. " 10,000
7. " 9000 - 10,000
8. " 10,000
9. Milon
10. Red pink flower 9000 - 9500

Species not certain
11. Fir 9000 to 11,000 ft.
13. Two species (small cone + large cone) pines

Plants from Iztacchihuatl

#12 Juniper 10000 to 10000 above timberline
13. Grass " " 10000 timberline
14. From timberline
15. Short white flowered plant 10000 below 5000 timber
16. Fluffy leaved plant 1000 - 5000 timber

Timberline on Iztac:
about 13,000 ft; limit vegetation grasses
Limit vegetation 14,000 - line of lichens
above 15,200. Possibly alittle tine.
F. P. HOECK,
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