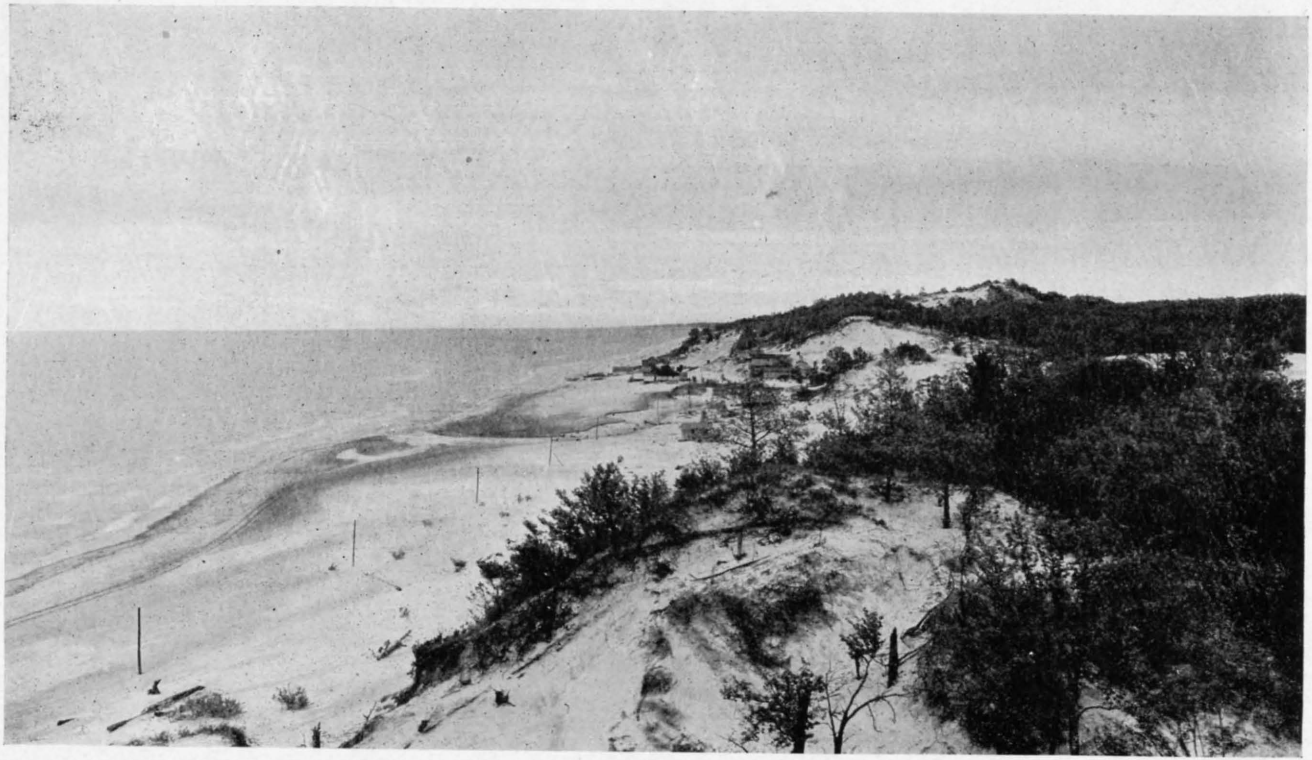
# The Dunes of Northwestern Indiana

The Dunes Region of northwestern Indiana consists of two parts. First, that occupying the portion of the old bed and shore of the so-called "Lake Kankakee", lying mostly south of the present Kankakee River and marsh; second, that portion of the old "Lake Chicago" bed and shore lying between the present Lake Michigan shore and the Valparaiso Moraine.

The first part extends east, approximately, to the western boundaries of Marshall and Fulton Counties, south as far as Monticello in White County, and west to the state line and beyond. There are portions of this territory, of course, not covered by Sand Dunes. The "Lake Kankakee" sand dune country in Indiana and Illinois covers more than three thousand square miles. More than two thousand square miles of this area is in Indiana.

When the last great glaciers came down from the north, they came to northwestern Indiana in three great lobes. The one from the north is known as the Lake Michigan lobe, the one from the northeast as the Saginaw lobe, and the one farther east as the Huron-Erie or Erie lobe. As these great ice lobes came forward they carried with them and pushed ahead of them great masses of materials, rock, boulders, gravel, sand, earth and clay.

As they pushed forward, holding in their mighty grasp these masses of materials, they came in contact with other masses, which they ground down with incredible force into finer and finer particles, stopping at the northern and eastern edge of "Lake Kankakee", The melting of the ice sheets and the natural rainfall produced the waters of "Lake Kankakee," whose surface rose until it flowed over the western barrier in Illinois, and was at one time more than forty feet above the present water level of the Kankakee River at the state line. As the warmer weather melted away these ice sheets, which were hundreds and possibly thousands of feet thick at their termini, great volumes of water were discharged and great masses of materials released. The waters flowed in this great lake, lacustral river, to the west and poured over the western barriers into the Illinois River valley. This continued for a long period of time, for the great ice sheets



Sand Dunes. Lake Michigan in the distance.

had many advances and recessions due to changes in the climate of those remote ages.

The great masses of rock, boulders, earth and clay, that were being released, fell and remained near where they were deposited and formed the moraines. Some of the gravel was carried by the water further along than the larger masses and may now be found at or near the foot of the morains.

The coarser sand was carried further out than the gravel and the finer sand still further until it covered almost the entire lake bottom. Some of this sand formed beaches and now furnishes evidence of where the shore line of old "Lake Kankakee" used to be.

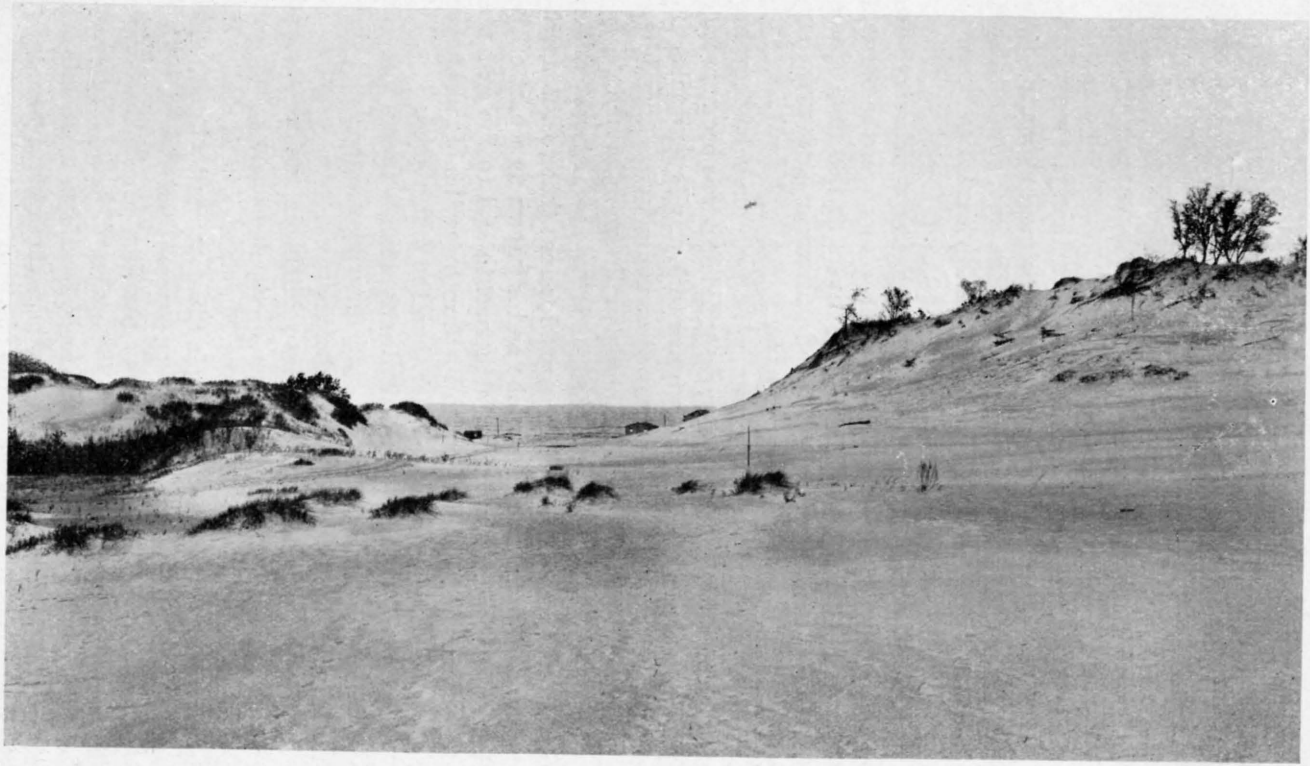
The real fine "rock dust" or "flour", out of which clays are made, was mostly carried in the turbulent waters over the barriers and down the Illinois and Mississippi Rivers to the gulf. Some of this clay material, however, found still water and was there allowed to settle and form clay deposits.

Where former moraine deposits were high enough, they appeared in this old lake as islands or extended into it as promontories or peninsulas. These islands, promontories and peninsulas inclosed bays in which the water was comparatively quiet, and here the sand was not carried and the clay deposits were formed.

The moraine to the north was made by the Lake Michigan lobe and is known as the Valparaiso Moraine; that to the northeast was made by the Saginaw lobe and is known as a part of the Kalamazoo Moraine; and that further south and to the east was made by the Huron-Erie lobe and is known as the Maxinkuckee Moraine. The latter two are older than the first named.

As the eastern lobe receded, it discharged its waters into the Wabash and Tippecanoe Rivers, and for a long time the Tippecanoe River flowed into "Lake Kankakee."

As the Saginaw lobe receded into Michigan, its waters and those from the northwestern border of the Huron-Erie lobe and the southeastern border of the Lake Michigan lobe came to the Kankakee by way of the St. Joseph River at South Bend. The Kankakee River was then a mighty stream and flowed with a swift current several miles wide at the foot of the Valparaiso Moraine. This great river kept that portion of "Lake Kankakee" occupied by it, deep and comparatively free from sand, and was filling up that portion to the south where the current was not so swift; and hence that portion of the old "Lake Kankakee" bed is much higher that the present Kankakee River valley. As the



Sand Dunes, showing action of wind in moving sand.

outlet to the west was being worn down, "Lake Kankakee" kept lowering.

If this had been gradual, the vegetation would have followed the water down and there would have been flat sand bars but no sand dunes upon the bed of the old lake. At sometime during the history of "Lake Kankakee" there was a sudden giving away of the barrier and the lake suddenly fell several feet. This left many of the sandbars exposed. The sandbars that were left high enough above the water to become dry were blown into dunes before vegetation covered and protected them from the winds. The portions kept wet were soon covered with vegetation and are today the old flat sandbars practically unchanged.

As the prevailing winds were then, as now, from the west, northwest and southwest, the sand was blown in the opposite directions, and the gradual slopes of the dunes are toward the windward sides and the steep slopes to the leeward sides. The flow of water being from the east, the opposite would be true of the sandbars.

By the time the Kankakee River was confined to its present narrow valley, the Tippecanoe had found its way into the Wabash and the Saginaw lobe had receded so far that the outwash of sand from it was not carried to any great extent into the Kankakee.

Sometimes the windward side of a dune is very near a marsh or pond, and it may be asked: Whence came the sand to form it? I have always found that the marsh or pond was made by a beaver dam or the closing of the outlet by the enroachment of another dune, and that the windward side of the dune had formerly been dry.

When at last the Tippecanoe had found its way into the Wabash, and the St. Joseph River had found its way into Lake Michigan, or old "Lake Chicago," and the ice sheets had receded so far that their waters found other outlets, the Kankakee River was reduced to about its present size and formed a narrow and very crooked channel within its present narrow valley which was once the main channel of a mighty river.

Within the old channel, which constitutes the present Kankakee River valley or marsh district, there are a few dunes, the sands for which were left no doubt when the waters of the St. Joseph River suddenly changed to Lake Michigan, by the encroachment no doubt of the Saginaw lobe. Almost all the dunes of the old "Lake Kankakee" region are upon the higher plain, south of the river, left dry or comparatively dry when the western barrier broke

Sand Slope, showing encroachment of sand on vegetation.

and caused the lake to disappear. A few of the dunes are found above and beyond the old lake shore line, but these were evidently blown there from the old shore beach.

The existence on the higher plain south of the Kankakee River, of certain low-lying tracts of moraine deposits, nearly free from sand amid bordering higher sand-covered areas, suggests that patches of stagnant ice persisted while the sand was being deposited, or that the current was then so swift at that place that the sand was not deposited, or the water so still that the sand was not carried there. Some of these deposits were evidently deposited by earlier ice sheets.

In the low valley of the Kankakee River several small moraine deposits are found. Some of them appear to have been deposited at the time the sand was being deposited, and some even after a part of the sand had been laid down.

When the Lake Michigan ice lobe began to melt back beyond the moraine it had formed, the water between the lobe and the moraine formed a lake. This lake, as it was then, is now called "Lake Chicago." This lake found its outlet southwest of Chicago at a place called the Chicago outlet.

The beach formed by Lake Chicago, at its early stage, is 638 feet above the ocean or 59.5 feet above the United States Government bench mark for Lake Michigan, which is 578.5 feet above the sea. The beach of a great lake is usually from three to five feet above the ordinary level of the water in the lake; therefore the water in "Lake Chicago" must have been about 56 feet above its present level. During its early period, which must have been a long time, for its shore is well developed, its waters were doing their work at places cutting away the moraine deposits along the shore, forming bluffs, and at other places depositing sand and gravel, making beaches. The beach at this level is now called the Glenwood Beach, because the town of Glenwood, Illinois, northwest of Dyer, Indiana, is located upon it at a point where the beach is well developed.

The beach in Indiana may be quite easily traced. It enters the state at Dyer and extends almost due east to a point about three quarters of a mile north of Merrilville; thence north easterly for about two miles; thence southeasterly for about two miles, to about one-half mile north of Ainsworth; thence east about a mile; thence northeasterly to within a mile of McCool; thence southeasterly about two and one-half miles; thence east about a mile; thence northeasterly to a point about a mile south of Chesterton:

Sand Dunes, showing destruction wrought by encroachment of sand on vegetation.

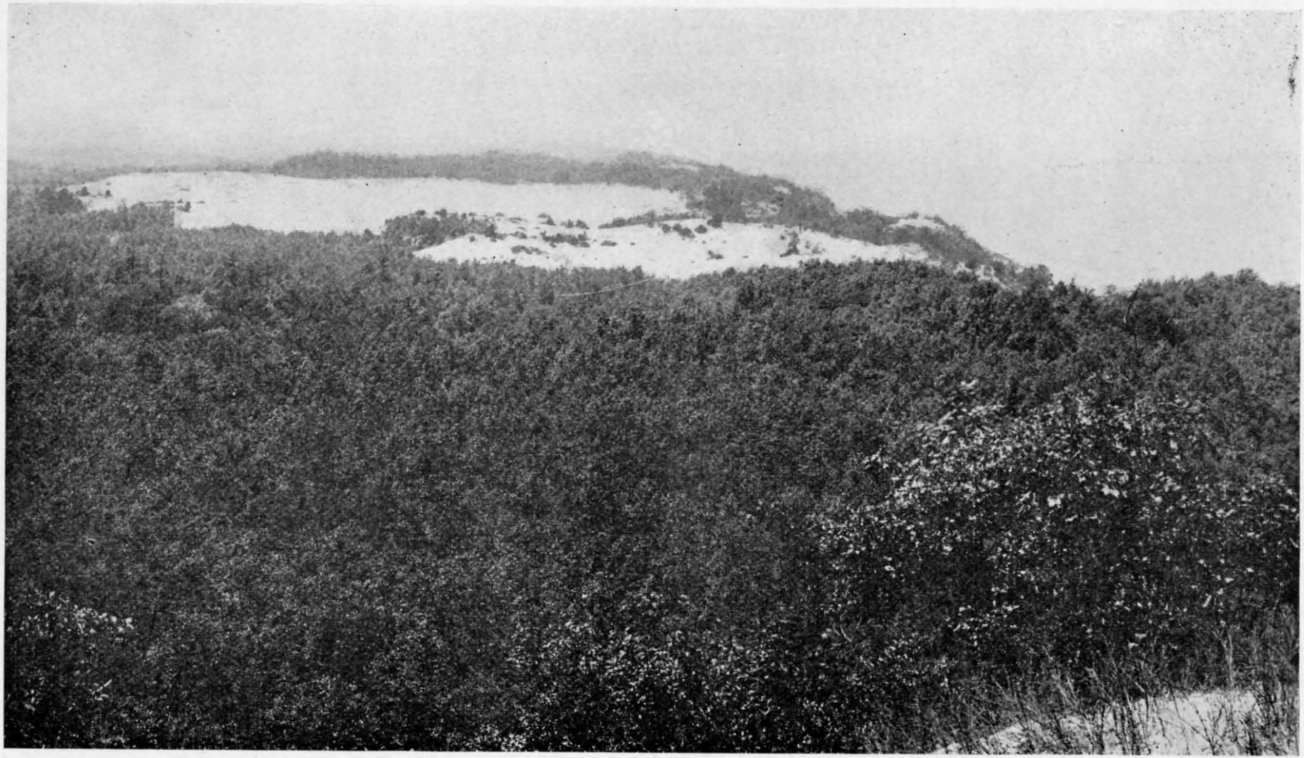
thence easterly from a mile to one-quarter of a mile south of the little Calument River to the Laporte County line; thence westerly on the north side of the river and from one-quarter to one-half mile therefrom to a point about two miles east of the old dune park station on the Lake Shore Railroad; thence northeasterly and about parallel to the shore of Lake Michigan, and about two miles therefrom to the Michigan State line, and beyond.

After remaining at or about this level for a long time, "Lake Chicago" suddenly or quite suddenly fell about 24 feet to what is known as the Calumet Beach, so-called on account of its paralleling the little Calumet River, about a mile south thereof. This beach is in many places well marked. It passes through Hiland, along the ridge road south of Gary, through Liverpool and on northeasterly until it almost touches the Glenwood Beach east of Dune Park station and thence on northeasterly close to and almost parallel with the Glenwood beach through Michigan City, and beyond.

"Lake Chicago" fell again about 15 feet to what is known as the Tolliston Beach, so-called because it passed through the town of Tolliston now a part of the city of Gary. This beach enters the state south of Hammond, passes through Hessville, Tolliston, about Fifteenth Street in Gary; thence on easterly through Aetna, Miller, Dune Park Station and thence easterly about one-half mile from and parallel with the Lake Michigan shore up into Michigan. The Tolliston Beach is about 20 feet above the present level of the lake. The ordinary water level of the lake at the time the Tolliston Beach was made must have been from three to five feet lower than the beach, or from 15 to 17 feet higher than it is now. When it found its new outlet, probably through St. Clair Flats north of Detroit, the lake was lowered to about its present level.

Some geologists have endeavored to explain the sudden lowering of Lake Chicago from one beach to another by the recession of the ice sheets, leaving lower outlets exposed, and the rising again to the advance of the ice sheets closing up the lower outlet. It must be remembered, however, that the Chicago outlet has been worn down through the rocky barrier from its highest mark, about 59 feet to within 8 feet of the present lake level.

The wearing down may have been interrupted but not discontinued, until the last fall. The sudden sibsidence may, therefore, have been caused by falls being washed out or barriers giving away in the Chicago outlet. At each fall of the lake it left



"Blow Out" on top of Sand Dune.

a great quantity of sand exposed, and as it was with the sand of the Kankakee, when left high enough to become dry, it was blown into dunes.

Along the Tolliston Beach the greatest quantity of sand was deposited, and between that beach and the present lake shore large quantities have ever since been, and are now being deposited.

To the westward, the accumulation, since the Tolliston Beach was left, has made land that has encroached upon the lake, and upon this newly made land the cities of Hammond, Whiting, East Chicago, Indiana Harbor and the northern part of Gary have been built.

East of Gary the accumulation has been added to the Tolliston Beach and by the winds piled high into great dunes. When one now speaks of the dunes he usually means the great dunes along the lake shore between Gary and Michigan City. This dune belt is from one-half to one and a half miles wide and the dunes are from 50 to 190 feet high.

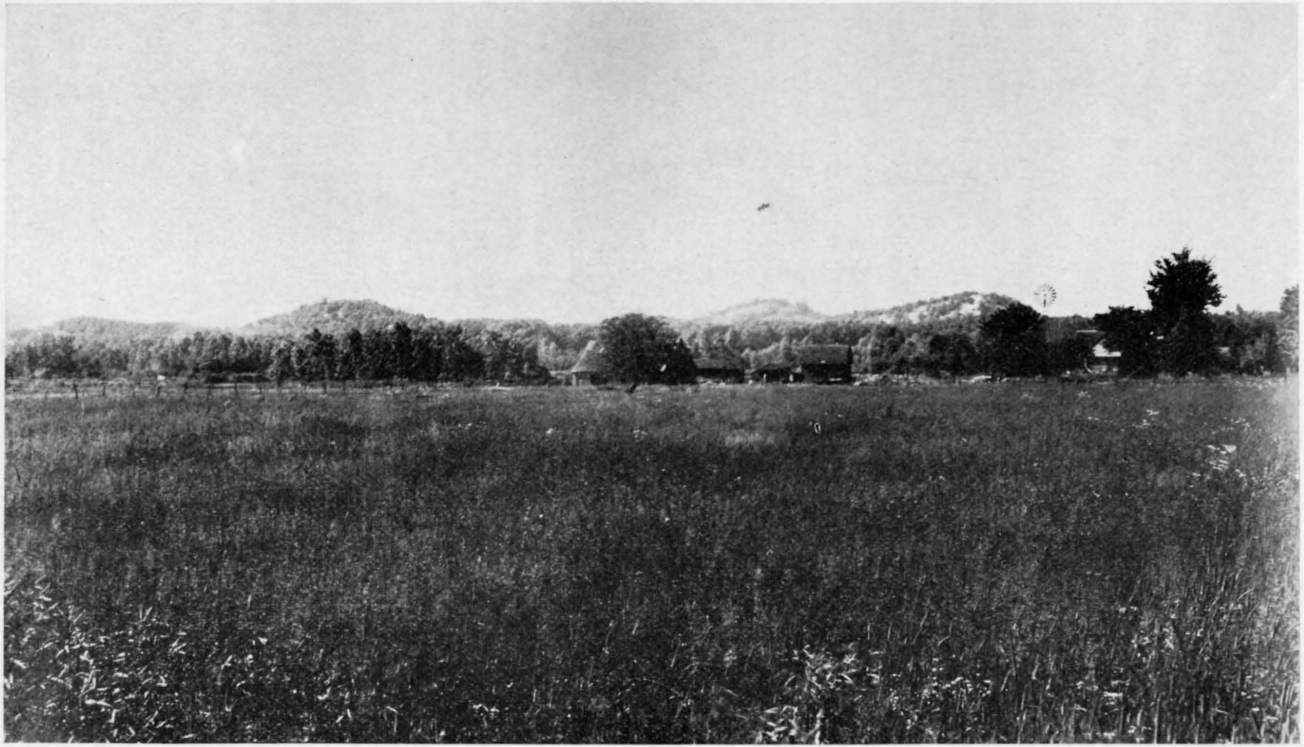
The first ridge along the waters edge extends from the Gary Steel Mills in an almost unbroken line to the Michigan State line, and beyond. Back of the first ridge the ridges vary in directions and enclose innumerable little valleys, which are from 10 to 50 feet above the level of the lake and contain from a few square rods to more than one hundred acres in area.

The dunes are, with a few exceptions, covered with a great variety of trees, shrubs, vines, ferns, reeds, rushes, grasses, etc., and the little lakes, ponds and marshy places, which they many times enclose, add another great variety of vegetation.

Here many plants are found that are found no where else in Indiana. Here, as no where else, plants from the distant north grow side by side with plants from the distant south.

The current that comes down along the western coast of Lake Michigan washes away the western shore and carries the sand along to where the current strikes the southern shore where it and the other sand washed from the lake are cast upon the shore, dried by the wind and the sun and blown by the winds into dunes of every shape, form and size.

Here along the southern shore of Lake Michigan are the greatest dunes anywhere to be found along the shores of the great lakes. Mount Tom, located immediately upon the waters edge, is 190 feet high and covers more than one hundred acres. It is almost due north of Porter and Chesterton, in latitude forty-one degrees and



Sky line view of Sand Dunes. Mt. Tom in distance to right.

forty minutes north, and longitude seventy-eight degrees and three minutes west. Near it are many other dunes almost equal in height and many of them much greater in area.

At many places along the lake, dunes are now being made, sometimes growing many feet in height and greatly in area; in a year covering up great growing trees, and at other places dunes are being blown away, uncovering trees that have been buried, perhaps, for centuries. These great bare tree trunks are now being resurrected, but not to life; they stand up now, gaunt and black, silent witnesses of their own murder.

Always the fight is between the sand and the trees, bushes, shrubbery and other vegetation. It is almost an even fight; in many places the vegetation has conquered at least for a while, but in others the sand has mastered.

The formation of the dunes is easily understood. As the wind, which is carrying or driving along the sand, meets an obstruction, such as a tree, a shrub, a bunch of "sand" or "dune grass" that flourishes upon the highest and driest dune, or a clump of "sand" or "dune willows" that grow everywhere on the sand regardless of soil or moisture—anything that will impede the wind, its current is interrupted, and in the quieter area in the lee of the obstruction, some of the sand is dropped. A little pile or drift of sand accumulating in such a place is the beginning of a dune. The "dune grass" and the "dune willows" grow and go up with the dune. The growing dune itself becomes an obstruction against and beyond which more sand lodges, and thus the dune grows until the height of the dune itself, or some other cause, stops its growth.

When the dune stops growing, it is soon covered over with a great variety of "dune vegetation," which preserves it for a while at least, but eventually a place made bare by the uprooting of a tree, a snow slide, the burning away of the great vegetation or the burrowing of some wild animal, may start a "blowout," which may increase until the whole dune is destroyed; but many times the treees, felled by the sand being blown away from their roots, form a new lodging place for other sand and the "blowout" may in time be filled up and covered anew with vegetation.

Destruction and construction usually go hand in hand. The wind takes up and drives along the sand, not only from the beach, but from the surface of bare dunes; it is carried or rolled up over the crest to be dropped on the lee-ward side, where it is piled just as steep as its nature will permit. This movement is known as the

Vegetation on slope of Mt. Tom, a Sand Dune.

migration of the dunes. In this migration, dunes cover up forests, fill up rivers, ponds, and small lakes and invade low-lands and fields.

Thus we see that the dunes are not fixed, but moving, slowly, silently, irresistibly, mysteriously.

"The dunes, the dunes; they drift and flow,
Like billowy waves of ocean wild;
No rest their changing contours know,
Heap upon heaps the winds have piled."

See the shining shifting sand, spotless perhaps; not a twig or a pebble nor a mark of any kind on it, except the little ripples on its surface, like those on the sea shore or the shore of the great lake at its base, left by the receding waves.

Near the base of this mountain of sand, piled steep and high, the grass and shrubbery are becoming covered; a little further up, the trees stand half submerged; still nearer the top you can see only the very tops of great trees; so on they will be literally buried alive and die from suffocation.

Back to windward, trees that have been buried, perhaps, for ages, are being uncovered, leaving their denuded trunks standing like ghostly monuments of an arboreal graveyard.

To the geologist the dunes are very interesting.

To the botanist they are unique.

To the naturalist they are a wonderful field of study.

To the artist and poet they are an inspiration.

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SANDLAND.

Sandland at twilight,
All hushed in brooding gray—
A place to find your heart again
And cast your cares away.
Duneland at sunrise,
Life's glory risen new—
The arms of freedom flinging wide
The gates your dream saw thru.

Sandland in starlight—
The night-song's voice is dear,
And folds the peace you thought of God
Where held your heart its fear.
Duneland at noon time—
What sorry stuff is gold,
That royal pride and miser greed in foolish passion hold.

Sandland in shadow—
Or shining in the sun—
What care you for the fame of men
Or what their wars have won?
For Duneland is dearest
Because no place is there
For echoes of the battle field
Or scars its victims wear.

Give me for a solace
The shelter of the dunes,
The songs that die in city streets,
Again are laughing tunes,
My dream of mighty temples
And victories of trade.
Ah! Foolish dreams, for the truth
Is Duneland's wonder made.

I may go back to trading,
To kingscraft, law or art—
But here, beside this castled strand
I leave my honest heart.
I need it not where commerce grinds
The souls of men to dust—
So, leave it where there is no fear,
To sing the songs it must.

The beach along the shore of Lake Michigan, near the dunes is four or five feet above the ordinary level of the water and is from fifty to one hundred yards wide, and, like the beach of old "Lake Chicago", is composed of sad and gravel, mostly sand.

At the shore line the sand is from eight to twelve feet deep and extends out to where the water is twenty-five or thirty feet deep. Beyond this depth and at some places not so deep, clay banks may be found, evidently the remains of moraine deposits left by the retreating glaciers. Around and between these clay deposits are usually sand pockets, or bars, not yet washed ashore.

The water along the shore near the Dunes is quite shallow for several hundred feet from the shore and affords many miles of beautiful bathing beaches.

Recently an effort was made to secure a portion of the dunes and the adjacent shore for a park. At a hearing conducted by the Secretary of the Interior, at the City of Chicago, on the 30th day of October, 1916, many distinguished naturalists, scientists, artists, nature-lovers, business and professional men from all over the country, appeared and in glowing terms pleaded for the preservation of the dunes as a National Park. On the 26th day of February, 1917, the Secretary made his report to the United

States Senate, strongly recommending that the United States Government secure and preserve as a National Park from 9,000 to 13,000 acres of the dune lands along the southern shore of Lake Michigan. On the 10th day of April, 1917, Articles of Association were filed in the office of Secretary of State of Indiana, incorporating the National Dunes Park Association, the purpose of which is to secure a public park, natural, if possible, to be located north of the towns of Porter and Chesterton, beginning one-half mile west of Mt. Tom and extending eastward along Lake Michigan toward Michigan City.