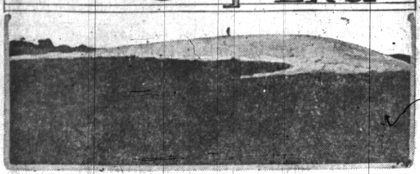
Traveling Sand Dunes of Peru



DUNE OF HALF MOON SHAPE

THE remarkable sand dunes of the Peruvian desert have attracted the attention of every visitor to this arid region. The striking feature of these formations is that they slowly but constantly shift their position, always in the same direction. In the Geographical Journal of London, W. S. Barclay thus describes and explains these traveling sand dunes.

Although the majority of the dunes are to be found in the western half of the Pampa, the subaerial weathering of the conglomerate bed from which they take their origin is noticeable elsewhere along the Peruvian coast. One of my most vivid recollections on the steamer voyage along the desolate coast from Lima to Mollendo is a vision, against the early morning sun, of a great flame-colored hill that seen through the coast fogs presented almost the appearance of a city on fire. This flame effect was, as I afterwards ascertained, due to sand and dust blowing across its upper ridges.

Starting from Mollendo the railway winds its way up the deeply eroded flanks of the coast hills. The hot air rising from the desert keeps back or dissolves the clouds which attempt to make their way across the Andean crests to the sea, and rain is reckoned to fall on this coast not more than once in seven years. When this occurs, however, its erosive effect on the soft, loose soil is striking. Watercourses 15 to 20 feet deep are cut in a few hours. One of these rare phenomena had taken place a few days before my visit. It does not pay the railway, when constructing its track, to allow openings for these infrequent cloudbursts, and one sees in consequence solid earth banks built along the hill flanks, damming gulleys of great depth extending sometimes a mile or more on the upside.

Wind That Forms the Dunes.

On reaching the Pacific fringe of the Pampa, or Desert, del Sacramento, after an ascent from the coast of some 4,000 feet, one begins to feel the wind which is responsible for the formation

SAND DUNE IN PERUVIAN DESERT

of the dunes. The general direction of this wind is from the northwest, being caused by radiation from the desert surface and the consequent inrush of cooler air from the Pacific. It blows at about 20 miles an hour on the hard, flat surface between the ridges.

The conglomerate bed of this desert Pampa is chiefly formed of the following constituents, in order of their importance: Quartzite tufa, gypsum, diorite (with iron and pyroxin crystals), and quartz. The whole is packed and blended by the gypsum which has run into and filled fractures made perpendicularly, thus facilitating weathering. The tufa is found in beds also in the neighborhood of Arequipa, and is cut into blocks for building purposes. They ring when struck like well-burnt bricks. The quartzite forms the main mass of the hills surrounding the desert. It weathers into a bricked oxide on the surface, which gives the desert its tone, making the sinty-white sand dunes noticeable by contrast. The quartz is infrequent. Diorite is interspersed in the conglomerate, but in angular form, showing no signs of water wearing; it must therefore be attributed to volcanic ejecta. The genesis of the sand dunes is best seen on the Pacific or western fringe of the desert, where the winds are eating away the conglomerate ridges (possibly the remains of an ancient higher level), which run out from the quartzite hills in a direction at right angles to the prevailing winds.

On the western border of the desert the sand remains largely inchoate, but after about 15 or 20 miles dunes begin to appear, and these increase in number till on nearing the inland fringe, some 25 miles from Arequipa, they can be observed in serried battalions accompanying the railway.

Once formed, the dunes take their typical half-moon shape and proceed in stately sequence southeast across the Pampa until they reach some large obstacle or abrupt change of level. If the barrier is negotiable they adapt themselves to cross it, the dune projecting itself into the easiest passes and elongating up to the limit of its sand mass. Once the obstacle is crossed, the vanguard of the dune marks time until the rear catches up, forms, once more into a half-moon shape, and proceeds on its way. These dunes often attain a considerable size. The march of the dunes is assisted by the sand ripples, whose more exposed surfaces are blown onward by the wind. The sand climbs the steep back of the dune more slowly than the low salient wings, hence the half-moon shape. Small particles travel at relatively high speed near ground level as far as the projecting points, or horns, but as soon as they reach them they are on the lee of the wind and their further progress is checked until the mass of the dune catches up. Thus the distance the sand travels along the points is dependent on the maximum height of the back of the dune, and this in turn depends on the force of wind.

Move 100 Yards a Year.

Owing to my short stay in the Pampa I was not able to check the dunes' rate of march by personal observation, but I was informed by plate-layers and other railway men, whose duties necessitate watching them, that the rate is about 100 yards per annum. The high hills flanking the desert near Arequipa are too steep to allow the dunes to proceed farther. They therefore pile up in a sort of a sandy cemetery at the eastern edge of the Pampa. Before they reach the end, however, and as the hills deflect the air in different directions, dunes occasionally advance over or threaten the railway line. The method of avoiding the threatened obstruction is simple but effective. A couple of men go out with long-handled spades and a wheelbarrow and collect loose pebbles and grit from the surface of the Pampa. This they proceed to scatter in a thin layer over the back of the unfortunate dune. The pebbles arrest the action of the ripples and so interfere with the even circulation of the sand particles, which is apparently as essential to the progress of the dune as the circulation of blood to a human being. Very shortly the dune assumes a lopsided shape, sagging where the debris has been cast upon it, and offering, instead of a well rounded back, a breach to the action of the wind. The progress of disintegration is fairly rapid, and at the end nothing is left on the Pampa except the original wheelbarrow loads of grit and pebbles which suffice to exercise the monster.

The dunes advance over pebbles and stones without disturbing their position. I noticed immediately behind several large dunes scattered stones that obviously had not shifted from their bed, just as pebbles may lie secure on the seashore in the swell of the breakers. Generally speaking, the smoother the surface of the Pampa and the higher the wind, the larger and more perfect becomes the dune.

A Tangled Path

By Victor Redcliffe

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Barton Gray stood like a being stunned by a vivid shock. Slowly the color faded from his face, his eyes quivered as though the power of will, hope and courage had utterly deserted him. At his feet lay an envelope. Crushed in his hand was a written sheet, throttled by the delicate, yet sinewy fingers, as though it were a deadly serpent.

"It has come!" he gasped. "After all the years!"

He straightened out and reread the fatal screed. It was a mere scrawl, crude, unformed, misspelled: "I knew you in your Canadian prison," ran the substance of the missive. "I have looked you up, and wonder at your audacity in keeping the old name. See that you are candidate for mayor of Lyndon. When my messenger comes again have the first thousand of five ready, or I expose you."

The messenger—Gray had barely noticed her—a flaunting, bold-faced girl with all the freshness of girlishness gone. Her breath reeked of liquor. She had been insolent, sneering, defiant. "I'd advise you to pay up," she said. "We need the money, and you had better spare it." Then she had vanished, while he was taking in the import of the dreadful screed.

Life, honor, love, happiness seemed fading away from him. After five years, from a remote corner of far Canada, a nemesis had crossed his path. The past had arisen to confront him in the guise of a blackmailer. What mattered the personality? The glaring, devastating fact was there, to be brutted about at random, to overtake him, to wrest him from a high, honorable position, to drag him through the mire of popular scorn.

He had deemed himself safe from that obscure past. He had dared to win a proud public position. The morrow was election day at Lyndon, 50 miles away. His election was certain. And was Elita, peerless, loyal Elita Pearce, his fiancee? Ah, there was the most cruel feature of this distracting crisis. Suddenly the impulse overcame him to hasten after the messenger, to learn the identity of the author of the direful threat, but, although he threaded the streets surrounding the hotel where he was temporarily a guest, he found no trace of the slatternly girl who had seemingly brought him his doom.

Doctor Everett Stood Like One Spellbound.

Then with set lips and grim, bloodless face, Barton Gray wandered aimlessly on and on, thinking, thinking, thinking! There was one way out—only one way. To pay the first price of freedom to a human harpy, was to place a millstone about his neck that would inevitably crush him and the dear ones time might group about. No, he would suffer alone—and now!

Abruptly turning a street corner into a wretched thoroughfare, Gray lifted and stared at a reeling, aimless being, the center of a tormenting, derisive mob. In a flash he recognized the girl who had acted as the messenger for his persecutors. She had apparently consumed additional liquor after delivering her message. Her audition made her a buffet and plaything for the idle group about her. To her, they pushed her into they gutter. They encouraged her strident oratory, they tore her garments, jostled her, and some one had sent for a policeman and Gray noticed him approaching from a distance.

A sorrow-eyed woman stood in her doorway regarding the scene with sad and tear-stained face. Gray swept aside the crowd. He seized the girl by the arm and led her to the doorway where the woman stood.

"Save this poor creature from that crowd and the police," he said rapidly. "Give her shelter till she is in her right mind again, and I will pay you for the trouble."

"I'll do it without pay," sobbed the woman, "but it will do no good. I had a daughter who went that way, and nothing could stop her. I'll do as you wish, though."

She helped Gray get the girl into the house and in a couch. Gray insisted on giving her money. She halted him as he was about to depart with the words: "If you please, sir, leave your name. Many trouble comes of this, your story might help me out of it."

Gray penciled his name and hotel address on a card and went his way. The crowd had dispersed, and the policeman was not in sight. Gray had done an act of kindness he could not resist in the natural goodness of his heart. He returned to his room at the hotel, sat down at a table and marked out the course he would now pursue.

He had come to Paxton on business, and his closest friend, a young physician named Lyle Everett, had accompanied him. The latter had gone further down the road, but had arranged to join Gray at his hotel at eight o'clock that evening and return with him to Lyndon.

At the time appointed Doctor Everett entered the hotel and the room occupied by Gray. He was startled to find the latter his face buried in his arms, and apparently asleep. He had been writing, and two telegrams ready to send lay upon the table. One was to Miss Pearce and it read: "I shall never return to Lyndon. Think the best of me that you can." The other was to the managing campaign committee at Lyndon, and read: "Appoint a new majority candidate at once. I positively refuse to accept the office."

Doctor Everett stood like one spellbound. He could not figure out the situation coherently. The oldest theory filled his mind that Gray, become overpowerne with drink, or insanity? He roused up his friend, shocked at the ghastly face revealed. Only one point would Gray discuss—his resolve to send the telegrams and disappear.

"Why?" came the challenging demand, but there was no reply or explanation.

"All right," finally spoke Everett, a firm, reflective expression in his eyes. At all hazards he must prevent his friend from sending those telegrams, which he believed were inspired by a passing mental aberration. "Your nerves are shattered. I will give you a strengthening draught and stay with you to the last minute I can spare."

Ten minutes later Barton Gray was under the influence of a powerful opiate. The doctor destroyed the telegrams. He employed two stalwart men to watch Gray through the night and the next day, giving further doses of the medicine to keep him in a state of insensibility.

It was nearly midnight of that second day when Gray awoke. The doctor had burst into the room. He was joyous and excited.

"Elected by the biggest majority ever given in Lyndon!" he announced in a kind of cheer.

Gray stared at him vaguely. Just then there was an interruption. Someone knocked at the door. The woman he had hired to care for the forlorn girl appeared.

"Oh, sir!" she said, "that girl! I got her to her home. On the way, telling her of your rare kindness, she broke down under it and made me wait until she sent a message to you. I promised to bring it," and the speaker presented an envelope.

The bewildered Gray opened it. There was a sheet which bore the record of "Barton Gray" in a Canadian prison. There was a note from the girl. "You will never be troubled again. Because you were kind to me, weary of life, I have solved the problem for my uncle, myself and those who schemed to blackmail you."

"That girl! all!" continued the old woman. "The girl and three others were found dead from poison late this afternoon."

The problem was, indeed, solved but not wholly, for Gray was innocent, though he would never have tried to prove it. His dearest friend it was who had used his name to screen his own, and who had undergone the prison sentence. Redeemed now, overplying a high position, Gray had been willing to sacrifice his own happiness to protect him.

And amid his later life of uninterrupted felicity, Barton Gray was always saddened when he thought of the wild, wayward girl who had cleared up for him his tangled path of life.

The Art of Being Happy.

Some people seem to think that happiness is a thing that you can get hold of and keep as if it were a possession or a quality of character. In reality you have to work for it and you have to keep on working. Teach yourself to respond to everything lovely or cheerful, to see beauty, to enjoy the society of your fellow men, to delight in work and to be enthusiastic in play. Teach yourself interest in the struggles and hopes of others—the sort of interest that is of use, that is a help, says an exchange.

Learn to enjoy the many little things that turn up day by day. Make the most of your own mind, your own capacities. Don't sit around, pondering whether you are happy or not, whether or not life is worth living.

Live it thoroughly, keep awake to all the wonder of it, and you will be happy without knowing it, at first, until you have gone along far enough to realize what happiness is.

Raw Eggs Keep Longest.

Raw eggs keep good much longer than cooked eggs, even when these are hard boiled. This was proved by Dr. Leon Lindet, a member of the Paris Conseil d'Hygiene, after many French soldiers had reported that the hard-boiled eggs they received from home had gone bad, while the raw eggs remained edible for weeks. Doctor Lindet explains this fact by saying that the boiling makes the inner membrane pervious to gases, liquids and microbes, and the white of the egg becomes an agglomeration of coagulated albumen and particles of a serum that is an ideal medium in which microbes thrive.

It Wasn't His Fault.

One youngster in school had delivered a sermon on the stomach to another lad. When taken to task as to why he had struck his playmate there, he said: "I didn't mean to hit him there, but he turned around just in time."

Handing Him One.

Pedestrian—Hey, you! Do you know you dropped a brick that almost hit me on the head?

Workman—All right. Yes kin have it. Q've got lots more av em.—Judge.

Rather.

Two Massachusetts towns were building a bridge jointly, and a joint town meeting was being held to arrange the distribution of the financial burden. Naturally, every man from Blakely was bound to look keenly after the interests of his own town and nobody from Peru could permit Blakely to put anything over. Words were exchanged between the watchdogs of the treasury on either side. Motives were questioned. In short, there was language. One of those present, speaking with asperity and emphasis, said: "I'd rather be the meanest man in Blakely than the leading citizen of Peru." Whereupon a selectman of Peru replied: "Well, you've got your rather."—New York Evening Post.

A Way to Test the World.

There is one way for every man to determine for himself whether the world is growing better or worse. All he has to do is to ascertain whether the number of people who agree with him is increasing or diminishing.—Boston Post.

Throwing Heat Away.

On all sea-going steamers the steam is condensed by sea water pumped through the surface condensers. This circulating water is then discharged overboard. In the process of condensation the cooling water taken in at temperatures varying from 32 degrees to 88 degrees Farenheit, according to climatic and other conditions, is raised to temperatures varying from 80 to 120 degrees and then discharged. This great loss of heat is practically unavoidable, says the Popular Science Monthly. Even on comparatively small steamers hundreds of tons of heated water are pumped overboard daily. This constitutes one of the greatest heat losses in the operation of steam machinery, although sometimes a portion of the warm water is used for scrubbing decks and for bath water on passenger ships.

Did His Share.

"You wouldn't think it, but I once had a happy home."

"Then why didn't you do something to keep it happy?"

"I did, mister—I left it."

Fads And Fancies of Fashion

It is early in the season to predict what the party frock for young girls will be made of, but manufacturers so far have given the preference to nets and chiffons. The girl who must be outfitted early for fall can make a safe choice between these two always beautiful mediums for translating the designers' ideas into evening clothes. Filet net as well as the fine round mesh nets, has been introduced along with new laces to help out the season's modes, while satin and taffeta, we know, will be depended on for petticoats and underslips.

Nets embroidered in metallic effect in filet and Russian styles are introduced on the new models for grown people and dyed filet or colored Russian laces are to be reckoned with for them. Gold and yellow tones in evening gowns and in dress hats indicate that gold color has mindy more than a temporary success. It is recommended for the silk slip to be worn under a net frock. These slips, by the way, are not always of silk, but of materials that have an equally good effect seen through the net.

WHITE NET PARTY FROCK.

In the white net dress shown in the picture deep tucks and narrow ruffles take the place of lace or embroidery. Clever dressing gives the frock the most valuable of all interests. Its creator depending on net alone to turn out an attractive party frock for the young girl, deep tucks and narrow ruffles alternate on the plain skirt. The three-quarter length sleeves are finished with three little ruffles and a piece at the front of the bodice makes place for the same sort of youthful decoration. The bodice is extended into a peplum at the sides, edged with ruffles and at each side of the panel is finished with a border of narrow ribbon. Hanging loops of ribbon at the waist line provide a setting for little silk roses posed at the top of the loops. The ribbon is chosen to match the uniform color, but the roses are usually in rose colors.

The day of the dainty and becoming jabot is not over, but it has passed its meridian. For there are other things in neckwear that claim more and more attention as the summer wanes; they emphasize our reluctance to part with it. Collars and collar and cuff sets have appeared and they will lighten up the frocks and suits that usher in fall and winter, and be replaced later on by accessories that suggest warmth.

The new sets are in white and colored organdie, in white crepe and in net. Sometimes two materials are combined in them, and very often two colors are used together, as for the white organdie collars and cuffs with little ruffles of organdie and lots embroidered in blue silk, in one of the sets shown in the picture. White and pink, white and rose, white and lilac are all favorites made up in this way. The little ruffles have picot edges and hemstitching contributes its share to the dainty finish of these new aspirants for favor.

White is not always part of the play in organdie neckwear. Pale shades of pink, blue, yellow, rose and lilac are used for collars and cuffs, as well as white, and made up with little frills, hemstitching and picot edging, with sometimes lines of hemstitching in white silk introduced. Tan appears to grow in the good graces of discriminating women, to be used in the place of white, where livelier colors are not desired.

But nothing can exceed fine, white organdie, daintily embroidered, and it appears in many sets. One of them is shown in the illustration made of Swiss organdie. Many small dots, exquisitely done scallops and a fine flower and leaf design contribute to the success of this rich bit of finery.

Julia Bottomley

NEW COLLAR AND CUFF SETS.

ENTIRE BLOUSES OF LACE

In Some of the Most Attractive the Patterns Are Worked in a Lustrous Silk Thread.

Blouses made of real laces—filet, Irish and the fine Bohemian lace are being shown. The filet blouses are particularly attractive, being made of soft, coarse lace in which the patterns are worked in a lustrous silk thread.

One blouse which is made entirely of this lace, is cut with a square collar which is embroidered in heavy white silk. It is finished by a row of crocheted buttons set very closely together down the front.

In another blouse the same sort of lace is combined with white net which forms a deep shoulder yoke and the upper part of the sleeves. This is also embroidered.

Heavy Irish crocheted lace is used for another blouse, which is cut with a smart high collar. The blouse fastens in front and is finished by a row of large crocheted buttons which form the sole trimming.

Mole Color and Blue Georgette.

Printed georgette by the hand block method has produced some novel and interesting color combinations in blouses. Among these is a blouse of mole taupe georgette, printed in a strange conventional pattern in dull French blue. The blouse is made over a tightly fitting under-bodice of same sort of satinnery material of the same color, and there is a tiny collar of lustrous blue satin.

The printing is applied to a broad draped panel at the front of the blouse, and also about the waist in a bolero effect. There are tiny borders of hand printing in the same soft shade of blue on the intricate cuffs, which seem to be a piece of material swirled about in spiral effect.

Like the Seashore.

"My dear," said Mr. Newdd as the sixteenth cook in a month came up the walk, "this reminds me so much of the seashore. I can sit at my own window and watch the breakers coming in."

DADDY'S EVENING FAIRY TALE

BY MARY GRAHAM BONNER

SPORT FISH.

"I have a story to tell you this evening of a fish which wasn't a fish at all," said Daddy.

"Goodness!" said Nancy. "I don't understand at all. I must be awfully stupid."

"I guess it's a fish story," laughed Nick, and Nancy joined in saying as she smiled.

"Of course, I might have known that Daddy had a good joke for us. I suppose the hot weather made me slow."

"It's really not a fish story at all—that is," Daddy explained, "it's not a fish story of the kind that Nick means. Nick thinks of course I have a lovely tale to tell of a fish who grew and grew and when he was caught it took sixteen men to pull him out of the water. Then, when they got him out, they found it wasn't a fish but a whale! Is that the kind of a story you expected, Nick?"

"Yes," Nick agreed. "Was I wrong? I really made no better guess than Nancy. She said she didn't understand. I tried to be so smart. But now I guess I'd better say I don't understand."

"Let's both say so at once," said Nancy, "and then Daddy will tell us."

"All right," agreed Nick. "Now, altogether!"

And both the children said, "We don't understand about the fish at all."

"Neither did I," commenced Daddy, "until I saw one and rode on one and heard that everyone of these peculiar creatures was called a sport fish."

"Oh, there were more than one," said Nancy. But Nick put his finger on his mouth to show Nancy that they wanted to hear Daddy.

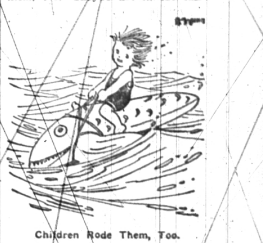
"You know that yesterday I went with some men down to a beach for a swim?"

"Yes," said the children. They thought to themselves that it was not going to be so strange after all. The fish lived in the water. That was quite natural.

"And there I saw," continued Daddy, "some great things which were made to look like big fish. They were made of rubber, I was told, and pumped up like automobile tires, and then they were covered with canvas. Their eyes were painted on the canvas, so were their fins and their tails. They looked like very funny fishes but still they did look quite right. And people were riding on top of them in the water."

"Oh," exclaimed the children. "How wonderful."

"Yes," Daddy went on, "they were on these fishes—the people were—and what games they did have with the breakers. The fishes would rush into the shore when a great wave would come and the people would have a most glorious ride. And children rode them, too. They're not in the least dangerous, for if anyone fell off in the water when one is riding a fish which lies right on top, one has no distance to fall at all and one simply gets a nice, jolly ducking.



Children Rode Them, Too.

"But by holding on fast no one need fall off—just lie or sit on the fish and the breakers and fish do the rest.

"Well, such fun as everyone was having at the beach. The children were laughing and crying out, 'Let's ride the sport fish.'

"Big men and grown-up ladies were saying, 'Let's ride the breakers on the sport fish.' My, how they go! Aren't they fun.'

"And I am quite sure that further out in the ocean real fishes were saying, 'Well, isn't it a shame! Here there are make-believe fishes that are thought more of than we are. And we're real, not just imitations!'

"But I also felt sure that old Grandfather Ocean Fish said, 'Now, look here, we have no right to get mad. We never offered our backs for folks to ride on. And we never rushed into the shore on the great breakers. So we can't grumble. For the sport fishes—and real fishes as to be sure—will help the grown-ups and children have the kind of fun they like.'

"And so tomorrow," continued Daddy, "I thought I would take both you children to the beach to ride the breakers on the glorious sport fishes—the make-believe fishes which give such real fun."

And both the children clapped their hands with delight.

Among the Treasure.

"So you have quit using sugar."

"Yes."

"On account of the price?"

"Oh, no. Valuable as it is, we have some. But I forgot the combination to the safe."

Approval of Uncle Robert.

"Are you fond of your Uncle Robert?" asked the visitor, who was herself inclined to be fond of him.

"Oh, yes, he's all right," said wee Willy. "He gives me a nickel to say he is not at home whenever a girl calls him up."

Growing Pains of Wisdom.

Mistakes are the growing pains of wisdom, the assessments we pay on our stock of experience, the raw material of error to be transformed into higher living.—William Ellery Channing.