

THE VALUE OF THE TRANSVAAL

TEN MILLIONS A MONTH THE STEADY PRODUCT AND THERE ARE BILLIONS YET IN SIGHT

UNDERGROUND IN A BRAND GOLD-MINE

FRANK O. CARPENTER.
TAKE your watch, hold it to your ear and listen to the ticks. For every one of them is worth of yellow gold is now coming out of the great mines under my feet. That is the measure of the stream, and it gets on second after second, minute after minute, hour after hour, day and night, all the year through. The steady output of the gold mines of the Transvaal is now \$4 per second, \$240 per minute, more than \$14,000 per hour and over \$300,000 per day. In 1907 the product was more than \$100,000,000, or more than \$1,000,000,000 of the yellow metal every month.

The Transvaal's Golden Flood.
In all history there has been no such golden flood as that which is now pouring forth from the Transvaal. The mines of India, of Ceylon and of Solomon were as nothing beside it. The treasures of Mexico and Peru in the times of Cortez and Pizarro, and the gold of California and Australia, Alaska and California have had nothing like unto this. The mines of the Rand are now producing more than one-fourth of the world's gold. They were discovered only a little more than 20 years ago, and they have already turned out more than \$1,000,000,000 worth of bullion. This is equal to one-fourth of all the gold of all the mines of all the world since Columbus discovered America. In weight it is just about 2000 tons, or so much that if you loaded it on the Transvaal wagons as a ton to the wagon it would take a line of teams 12 or 15 miles long to carry it all.

More than this, this mines promise to continue pouring out gold for generations to come. They could produce twice as much today if they had the labor and they could produce ten times as much if they had the machinery. The gold reefs, in which the precious metal lies, have been proved for a length of more than 60 miles, and experts say that there can be a depth of 4000 feet. If they were worked to 4000, the amount so far taken out would be just about 1 per cent of the whole. The Transvaal mines are producing \$100,000,000 to \$150,000,000 of the precious bullion left.

The production has been increasing by leaps and bounds ever since gold was discovered here. In 1884 the output was about \$10,000, and 10 years later it had jumped to \$25,000,000 per annum. It steadily increased to about \$100,000,000, which was the annual output at the beginning of the Boer war. It then fell to almost nothing for a year or so, but in 1904 it was again \$100,000,000, in 1905 it was \$120,000,000, in 1906 it was more than \$120,000,000, and in 1907 the vast sum of \$126,750,000. These amounts are inconceivable, but they are what the mines are producing today. The aggregate dividends last year were \$25,000,000, and the mines which paid them are capitalized at over \$120,000,000. I have before me a newspaper which gives the products of a dozen of the leading mining companies during the past month. None of them has paid less than \$7500 for every day of the month, and some as high as \$15,000 per day for the 30 days. Talk about gold. Where will you find it elsewhere as here?

The Golden Dough of the Rand.
I almost despair of describing these caves of Aladdin on the highlands of South Africa. They are not like any mineral region of North or South America, and I doubt if they have their counterpart on the face of the globe. The country is half desert and there are no indications of minerals. The gold is found in several hundred reefs, which run through a range of low hills for a distance of about 150 miles. The land is a mile or more above the sea, and the hills run from 100 to 200 feet higher. The reefs begin at the surface and extend down at a regular slope for no one knows how deep into the earth. They are great sandwiches of gold-bearing rock, streaked here and there with a conglomerate or pudding containing quartz pebbles. The pebbles may be called the raisins in the pudding. They range in size from the size of a swallow up to that of a goose, but they contain no gold. The gold is in the dough of the pudding, or the cement, which holds these quartz and other rocks together. Money is often called dough in our slang, but the dough of the Transvaal is the Simon-pure thing and is ready sprinkled with gold.

On the Great Reef.
I can describe this better by taking you with me on a trip over the reef and going down into one of the mines. We might start at Johannesburg, and go east and west for 50-odd miles and see nothing but mines all the way. We get the train at Park Station and are soon flying by the great walls with their mountains of tallings. We can see the black smokestacks cutting the sky at the front and behind us, and we could throw a stone into the great holes, seeing white sand which have been left near the mine after extracting the gold. On each of those hills cars are crawling up and down. Some of them are attached to steel cables, which bring the refuse for several miles and automatically dump it on the top of the hill, crawling on without stopping until they are back at the works ready to be loaded again. The cars look like enormous ants or bugs. They are going on the dead run over the white sand, which shines out under the rays of the African sun.

As we go the train stops every few moments, and at every stop is a mine. Think of a range of sandhills, the material of which is as fine as that you use for scouring your floors. Let it rise right out of the green hills and extend on for 40-odd miles, and you have some idea

of these enormous piles of refuse which have come from the reef. Remember, as you look at it, that every grain of that sand was once part of a rock containing gold, and that hundreds of millions of dollars' worth of gold has come from it. You continue your ride you will find a fence of iron smokestacks along the whole 40 miles, and you will never be outside the din of the stamps which are crushing the rocks to get out the gold.

In a Big South African Mine.
It is only one of these mines that we shall visit today. It is the "Simmer and Jack," within a half hour's ride by train from Johannesburg, covering an enormous territory sprinkled with gold. This mine has produced more than \$5,000,000 worth of gold during the past year, and it yielded about \$500,000 worth of gold last month. It is a great gold factory, devoted to taking I don't know how long, and reducing it to bullion. The ore contains only about \$1.00 worth of gold to the ton, and the profit is not more than \$7 cents on our-elves. It has the best of mining machinery and it works between 6000 and 6000 men day and night, Sunday and week day, all the year through. It has more than 1000 Chinese, 1000 black natives and the hundreds of whites who act as skilled laborers and as overseers and managers.

A Gold Sandwich.
The Simmer and Jack begins at the surface and its gold-bearing rock runs down at an angle of 45 degrees to no one knows how deep. The gold is in a great sandwich of rock more than a mile wide and on the surface it is about 1000 feet thick. Already tens of thousands of tons of the gold-bearing conglomerate have been taken out, and 50,000 tons are now being raised every month. The Transvaal is a great gold mine. It is a California engineer named Seagraves, who has been in Africa for some years. Upon my telling him that I wanted to go into the mine he said there were 60 miles of tunnels and a great deal of work to be done. He asked me to show me as much as he could in one day. Before descending, we put on miners' clothing. We then entered the mine, and the first which had just brought up two tons of

ore. Then a signal from the engineer dropped us down into the darkness and another signal stopped us at a tunnel 300 feet from the surface. Here we left the skip and walked through tunnel after tunnel out out of the sandwich, now and then stopping to look down the incline.

Imagine a mighty cave just high enough for a man to stand upright within it and running down at an angle of 40 degrees for hundreds of feet, making a flat, slanting hall covering acres. There are rock walls above and rock floors below, and away down the slant hundreds of feet distant are scores of yellow Chinese pounding the drills to make holes for the blasting. The Chinese are bare to the waist and they sing as they work. Each has a candle, and the light from this gives him a weird appearance as he slaves, away down there in the darkness. The Chinese are paid at the rate of 1 cent for each inch of hole drilled, and an ordinary man drills 50 inches or more in a day. They are going out the holes for the dynamite candles. At certain hours charges are put in and several scores of blasts are set off at once. After this the ore, which has been blown out, is shoveled down into the case in the tunnel below. It is then carried to the shaft, up which it flies in great iron skips and onto the stamps which crush the gold out.

A Look at the Ore.
As I went through the mine Mr. Seagraves showed me the gold-bearing pudding. It lies here and there in streaks or streams in the rock, now widening and now narrowing. It is a blue conglomerate filled with pebbles of white quartz embedded in a cement which is impregnated with iron and gold. The gold is in crystals and flakes so small as to be invisible to the eye. It would give no yellow metal whatever, and the rock looked more like limestone than anything else. The miners disregard the pebbles, for they have been crushed again and again and found to contain no gold whatsoever.

The gold-bearing strata lies upon granite. It is supposed to have been deposited by means of water in a great clay, which in time has turned to cement, and which by volcanic force has been forced up into the slanting ridge which now forms the southern watershed of this continent. Indeed, it may be that the gold was once in the water just as gold is now said to be in the waters of the ocean. Seagraves says that the reef is about 400,000,000 worth of gold in every cubic mile of sea water, and if this is so it would only take three cubic miles of the ocean to furnish the present mighty yearly output of the Rand.

nearly all they are worth. The first declaration by the dealer is forced; but after that all further declarations are voluntary and are based on information, more or less accurate, of the chief element in the partner's hand, and the adversaries of the declaration know something about where the strength of the suit lies, so that they are able to combine their forces to the best advantage.

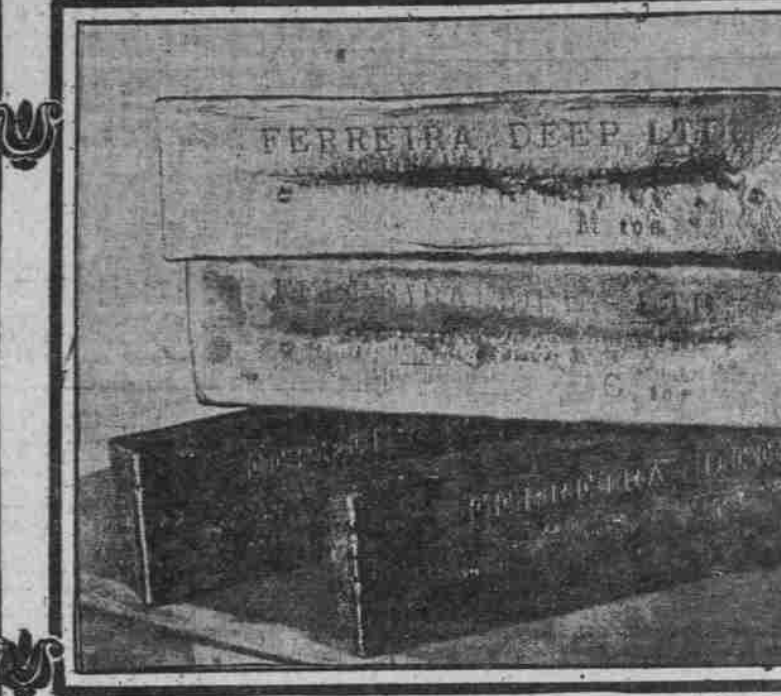
This makes the game more of an intelligent partnership than bridge, and at the same time it opens a wider range for the exercise of personal judgment as opposed to dumb luck. Above all, auction bridge holds out its reward to the possessor of that great qualification for success in any game—courage.

The rules of the game as laid down in the code of laws have been considerably changed from the rules which were in force only two months ago. The result of these changes, it is generally conceded, will be to make auction bridge a much more popular game.

There is no change in the preliminary deal and deal are cut for and 13 cards are given to each player. The dealer must start the ball rolling by making a declaration of some kind. This is not to be assumed as showing great weakness, so it is called a forced declaration, because the dealer must say something.

Subsequent bidding will show whether he is absolutely weak or is just waiting to hear from the others, especially his partner. It is very weak, it is conventional for him to bid two in spades if the second bidder passes. This warns the dealer not to take any chances.

If the dealer is strong in spades, so strong that he would be willing to have that suit for the trump if it were with anything on the score, he bids two in spades. This bid is not made with any intention of getting the play on a spade make, but it is to distinguish a weak or forced declaration, with nothing much in the hand, from a hand which is very strong in one suit, spades. The idea of the original "two in spades" bid is to show a suit.



"READY FOR THE UNDERGROUND," MAN AT RIGHT IS AMERICAN MANAGER, MR. CARPENTER AT LEFT

I have been in many gold mines, but in none where the dangers are greater than in these great slanting caves of South Africa. The walls so dip that you have to take a rope or chain to hold on to, as

you move through the slopes, and a slip would send you rolling down over the rocks for hundreds of feet. The accidents are so many that visitors are required to give a pledge before they enter

the mine that no action will be taken against the company in case they are injured during the journey. The mines are not timbered, as the rock is solid, but nevertheless the blasting frequently cracks the walls and masses fall down into the tunnels upon those who pass through. There are also cars whizzing along, the ore rolls down the planes and rocks weighing tons fly this way and that.

Big Mills of the Transvaal.
But let us go to the surface and walk through this mighty gold factory. The rock floors have machinery equal to the finest used in America, and the Simmer and Jack has 320 stamps, which work day and night, crushing the rocks for the mercury plates and cyanide vats.

As the rock comes to the surface it is in lumps of all sizes from that of my fist to a half bushel measure or larger. It is of a bluish color, and it looks much like the limestone we use for fixing the turnpikes. There is not a glint of gold to be seen anywhere, and when crushed the rocks look just like the dust on the roads. The rock is first sorted by machinery, that the larger pieces may be broken before they go into the crushers. They are then crushed up after the same fashion that our grandmothers ground coffee, and that these crushing mills will chew to pieces rocks the size of a peck measure.

When the ore is comparatively fine it is dropped down into the stamps and pounded by them to dust. These stamps are great bars of steel, which are allowed to drop upon the gold-bearing rock. There are 220 of them, and as they fall they make a noise like that of Victoria Falls, and rushing over Niagara. The din is so great that the workmen have to stop their ears with cotton to keep from losing their hearing. Indeed, the four most deaf hands to the sides of my head to shut out the sound.

When the rock comes from the stamps it is a fine flour of gold ore. It must be kept from being crushed by mercury, which catches the gold and allows the dust to go on. After this the refuse is treated to a bath of cyanide of potassium and water, which takes up such gold as is left. The processes are about the same as those used in our great mines of the West, and as a result practically all of the gold is saved.

With the Assayers.
I was much interested in going through the assay offices of this great mine. The ore has to be tested again and again to know how the mine is working and to be sure that nothing is lost. Something like a thousand assays are made every day. A very little bit of ore is taken each time, but the gold and silver is all gotten out of it, and then, by measuring and multiplying, one can tell just how much gold there is to the ton. In this assay office the gold is added to the ore, and from such sample comes a button of lead about as big as the end of your thumb. In this lead is the gold. The button is heated in a furnace during which process the lead disappears and the gold only is seen. The seek of gold is often not bigger than the point of a fine needle, and the weighing machinery are so fine that the assayers can easily tell just how much the stuff runs to the ton.

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The Real Thing.
Before leaving I mentioned to the assayer that I had spent a whole day in the Simmer and Jack, and had been told with a grin that the millions of dollars' worth of gold it was producing. I said that I had seen thousands of tons of ore alleged to be loaded with gold, but had I not seen the first glint of yellow or any sign of the pure golden thing?

"If you have any doubts as to the reality of the gold," said the assayer, "I can dispel them by showing you some bricks made here within the last few weeks, which we are about to ship to London. The bricks are made of bright yellow metal shaped like a paving-brick and perhaps two inches thicker. He put it on the scale and it weighed over 70 pounds. He said that its value was \$150,000. In the same vault I was shown other bricks which run up to more than \$100,000 each."

During my conversation with the assayer I asked him how the gold was sent to London. He replied: "It is sent to London by the Cape Town and thence by the mail steamers to Southampton. The shipments are made every Monday in order to get to London before the Cape for the ship sailing Wednesday. Each brick is put up in a separate wooden box, which is bound around with iron wire. The boxes are packed in the shipping, and the railways are responsible for the gold from here to Cape Town. On certain Mondays of the month the ship carries to London \$4,000,000, including about 25 of these big golden bricks. Johannesburg, South Africa.

AUCTION BRIDGE WILL BE RULING GAME THIS WINTER

IT PROMISES TO SUPPLANT THE PRESENT POPULAR GAME—POINTS YOU SHOULD REMEMBER.

THE card players returning from Europe all bring the same story: that auction bridge is the game for this winter. The leading card clubs in London appointed a committee which has drawn up a code of laws for the new game, and publishers on both sides of the Atlantic are rushing into print with text-books for it, says the New York Sun.

It looks as if the day of the despotic dealer was done. No longer shall the autocrat of the bridge table issue his mandate that such and such a suit shall be trump, no matter what the other players hold or how they feel about it. The bridge table is henceforth to be a democratic one, with equal opportunities for all, and no monopoly by any privileged class is to be tolerated.

As bridge is now played more than half a player's strength is wasted, because it cannot be applied to the place where it would do the most good. You may hold splendid cards, but unless you hold them at the right time, when it is your declaration or when the make fits your hand, your cards are good for little or nothing. Of what use are five honors in bearing against a diamond make with a solid club suit behind it? It is about the same thing as holding four aces at poker when it is your age and no one comes in.

In that suit, such as six cards to the ace, king, queen, or something of that kind, because a bid of even one in the suit is a bid, and it is, more than anything else a hint to the partner that if he wants to try a no trumper there is a great club suit in the dealer's hand to help him out.

Diamonds are declared much more freely than at bridge, not so much with the idea of playing them as with the idea of indicating the suit and the character of the hand to the partner. It is very useful sometimes for the dealer's partner to know that the dealer has a hand which is not strong enough for no trumps nor weak enough for a spade, but has some good diamonds in it.

The dealer having declared, each player in turn to the left has a chance to declare something better, or to pass, or to double. A player can outbid his partner, but he cannot double him, although he can redouble an opponent who has doubled.

Overbidding for safety. To overbid another player means either name the same number of tricks in a better suit or a greater number of tricks in a lower suit. It sometimes happens that the point value of two bids is equal, in which case the player offering to make the greater number of tricks to reach those points is considered the higher bidder.

Suppose the dealer starts things by declaring one in diamonds and that the next player says two in clubs. These two club tricks, being worth eight, are better than the odd in diamonds, worth six only. Let us now suppose the dealer's partner to overbid both these by declaring one in no trumps, worth twelve.

The fourth bidder, guided by his partner, raises the bid to three in clubs. While this is worth no more than the odd in no trumps, twelve points, it is a better bid, because it will take more tricks to make it good. It will now be the dealer's turn to overbid, double, or pass, and so on round the table until no one will go higher.

Double being no higher, as a bid, than two in hearts not doubled. All the doubling will affect is the scoring at the end of the hand, if the double stands.

After a double or redouble any one can make a bid which is higher than the one which has been doubled, the doubling itself being ignored. Suppose the dealer starts with one in clubs, and the second man says one in diamonds, which the dealer's partner doubles. If the next man offers one in hearts, it outbids the double and prevents a redouble, because for the purpose of bidding the doubled diamond is still worth six points only. It is not until it comes to the scoring that it would be worth 12.

Passing after the dealer has declared may mean that the player is satisfied with the trump named, or that he can do nothing better, or that he is waiting to see what the others have to say. Passing once does not prevent the player from coming into the bidding again, provided someone makes a bid in the meantime.

Great Difference in Scoring. In auction bridge only the declaring side can score trick points below the line. Nothing scored by the other side counts toward the winning game. If the declaration fails, whether it is doubled or not, neither side can score anything toward game below the line. Everything must be put in the honor column above the line.

If the declaration succeeds the partner scores tricks and honors as in ordinary bridge. If they fail they score nothing but the honors that they may hold. It does not matter if they get three by cards when they have bid four, they get nothing for those three tricks.

When the declaration fails, the adversaries score 50 points penalty. In the honor column, for each trick by which it fails, and this penalty of 50 points a trick is invariably added to the regular points that fall to a no trumper or a spade: for one trick or for seven. Defeating the declaration does not advance the score a single point toward game, but it may materially add to the value of the rubber.

One Confusing Point. This point is rather confusing to some persons, because it is not necessarily the highest bidder that becomes the declarer who is to play the combined hands. Suppose that Z, the dealer, starts with one in hearts, the next player, A, bids two in diamonds, and the third player, Y, bids two in hearts, and A's partner, B, says two in no trumps. Z passes, A passes, and Y bids three in hearts. B now goes back to his partner's suit, because he infers that his partner could support a no trumper, and bids four in diamonds, which Z doubles.

The player who originally named the suit, diamonds, was A. He has been outbid four times, by hearts, by no trumps, by hearts again, and by hearts; but he is still the declarer and it is one to play the combined hands, just as the dealer would play his own and dummy's in straight bridge.

The bonus for winning the rubber is 200 points, instead of 100; otherwise the scores for tricks, honors, chances and slams are the same as those to which all bridge players are accustomed. A rubber at auction bridge is often worth 2000 points, on account of the bids that are made to save the game, and which have to pay heavy penalties. The same thing prolongs the rubber and is about the only real objection to the game. In this playing to keep the game in by overbidding, it must be remembered that the penalty is the same for any declaration, so far as suits go, so that it is better to overbid with fewer tricks at a high value than to risk a number of tricks in a lower suit. This is where the judgment comes in.

More than 20,000 employees of the Pennsylvania Railroad have been instructed at the company's expense in first aid to the injured.