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(Illustrated articles are marked with an asterisk.)

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No. 1128.

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THE ALASKAN GOLD FIELDS.

The announcement of the return of two steamers from the Alaskan gold fields last month, with a small party of miners on board who carried about a million and a half in gold between them, has gone through the world like an electric shock and bids fair to end in a "gold fever" comparable only to the wild excitement of the California discoveries in 1849. Already the "rush" has begun, and in spite of the warnings of the miners who have just come out of the country, and the detailed account by the press of the inhospitable and inaccessible nature of the placer districts, the symptoms of that wild scramble incident to a gold excitement are more or less manifest throughout the continent.

As compared with the California discoveries of half a century ago, those in Alaska will differ greatly in the nature of the climate under which the work of the miner must be carried out, the one being as rigorous and trying as the other was mild and favorable.

This is a fact that should be carefully considered by every inexperienced but adventurous spirit that may be contemplating a trip to this remote corner of the earth. The fact that in 1849 clerks were able to leave the desk and counter, and business men the snug comforts of home and office, and plunge without hurt to themselves into the hardships of California camp life is no proof that a similar venture may be made in these mining camps of the far North, where the thermometer has a range of one hundred and sixty degrees in the year, and sixty degrees below is a common experience in the winter. Of all the incidents related by returning prospectors, nothing is more significant of the peculiar difficulties of Alaskan mining than the fact that the gravel beds have to be thawed out by building wood fires above them before the material is ready for the miner's pan and the sluice-box.

The Klondike River, in which the rich gravel beds lie, is a minor tributary of the great Yukon River. Although the gold fields are, and probably will be, popularly known as Alaskan, they lie to the east of the boundary line and are therefore in the Canadian Northwest Territory. At present there are two routes by which the district can be reached from Seattle, the nearest American port. The longer and less trying journey is made by ocean steamer to St. Michael at the mouth of the Yukon, and thence by river steamer to Dawson City at the confluence of the Klondike and the Yukon. This route is estimated to be about 4,700 miles long. The cheaper and shorter route, and that taken by most of the miners, is by steamer from Seattle to Juneau, and overland from this point to Circle City. Although this route is less than half the distance of the former, it involves an overland journey of nearly nine hundred miles, in which traveling is difficult and in some places attended with considerable hardship.

As to the placer deposits themselves, they are undoubtedly of extraordinary richness. The fact that miners should come out after a few months' work with from twenty thousand to two hundred thousand in gold proves this beyond a doubt; but just what the extent of the gold field is, and how many other tributaries of the Yukon will show a similar prospect, time alone will tell. This much however is certain: the outside world will only hear of the larger fortunes, and little will be said about the host of unsuccessful adventurers who form the background upon which the alluring bags of gold dust and jars of nuggets of a mining excitement are displayed. Except to the few thousands who locate the richest claims in the first rush of prospectors, the average chances of digging up and washing out a speedy fortune are very slim. It is easy to estimate that of the thousands who will probably go to the Klondike in the spring, but very few will find claims that have not already been staked out. There are probably at this writing some four or five thousand miners on the Yukon, and they will flock, as is the miners' wont, to the new El Dorado. The length of the permissible claim along a stream is five hundred feet, and a simple calculation shows that these men alone could cover five hundred miles of the best claims before the arrival of next season's crowd of adventurers.

Next to those fortunes which are made in the placer mines the most speedy and largest fortunes will be realized by the prospectors who discover the rich quartz deposits from which nature has broken out and washed down the present gravel beds. As yet nothing has been done apparently in the way of quartz prospecting, although it is likely that rich veins exist somewhere within the watershed of these various tributaries of the Yukon. At best placer mining is but introductory to the more extended and enduring quartz mining, and when the latter has once been put fairly under way, we may look for the systematic development of this remote but extremely interesting country.

The present discoveries of gold come as a further vindication of the wisdom which dictated the purchase of Alaska from the Russian government just thirty years ago. Its purchase price was $7,200,000, and it is estimated that the royalties from the fur sealing company, the rich returns of the salmon industry, not to mention the annual output of the great Treadwell gold mine on Douglass Island, the largest mill of its kind in the world, have together paid back the purchase price many times over to the United States. It is stated that there are indications of the existence of coal and the various leading minerals; but at present there is no evidence that the country is capable of producing the necessaries of life, though more than one explorer has given it as his opinion that certain crops could be raised in the summer months. Undoubtedly the great and enduring drawback to Alaska will be the dark and bitterly cold winter, in the depth of which there are twenty hours of darkness and but four of daylight, and the thermometer goes down, as it did last winter, to 70 degrees below.

Apart from the benefit conferred by the placing of additional gold in circulation—a benefit which in its total effect, however rich the mines may turn out to be, will be considerably less appreciable than is commonly supposed—these gold discoveries give an indirect impulse to trade and quicken the pulse of the industrial world. In this respect the Klondike excitement has already produced a marked improvement on the Pacific coast, and this greatly depressed country seems to be in a fair way to recover some of its old time prosperity.

STEEL WAGON TRACKS ON COUNTRY ROADS.

It is the narrow tires of heavy farm and freight wagons that do the most serious damage to country roads, especially during or after heavy rains, or when the frost is coming out of the ground in the spring. A single wagon track, but slightly depressed below the general surface, forms a channel in which the water will stand on the level and down which it will run on the hills, softening or cutting out the material of the roadway, and preparing the way for the traffic to grind out a couple of deep and unsightly ruts. These results are seen at their worst in a country where the soil is alluvial or clayey; but in any country and on any road except a first-class macadam the destruction of the surface by formation of ruts is only a question of time. The adoption of broad tires on all wagons, and care in filling the ruts, would mitigate the evil; but as things go to-day in most country districts, these remedies are conspicuous by their absence.

The United States Department of Agriculture is carrying out experiments with a view to saving country roads from this quick deterioration. The device consists in laying down in the center of the road two flat steel tracks to the gage of the average farm wagon. The steel rails, for they are nothing less, are to be $\frac{7}{16}$ inch thick and of an inverted trough shape. They will be bedded in gravel laid in trenches, and they will be tied together at the joints and in the middle. On all hills the rails will be slightly corrugated or roughened to enable horses to take a good foothold. In addition to the durability of a road made on these lines, it is claimed that such a road would reduce the tractive resistance from forty pounds per ton on a macadam surface to eight pounds per ton on the trough rails.

It is estimated that the cost of the rails and fittings for a short stretch of road will be at the rate of about $3,500 per mile; though a line several miles in length could be built for about $2,000 per mile. This estimate is for a track which would weigh about 100 tons per mile; a track for lighter traffic, weighing about fifty tons per mile, could be built for half the above named sum. These figures represent the cost of material only, the grading and track laying not being included.

As regards the value of such a road, there may be some districts where its construction and maintenance would be more economical than that of a first-class macadam, but we doubt whether it would prove to be so in cases where the materials of macadam construction are within easy reach. As regards the increased hauling capacity of the steel-tracked road, there is no doubt that it would be greatly increased, though scarcely, we imagine, to the extent—five hundred per cent—claimed by the advocates of the system.

PROPOSED COMPLETION OF THE HUDSON RIVER TUNNEL.

It is gratifying to learn that there is prospect of the early completion of the tunnel under the Hudson River, which was begun in the year 1874, and upon which work was suspended in 1892, when about four-fifths of the work had been completed. It is stated by the legal representative of the English bondholders that steps are to be taken to foreclose the mortgage of $2,750,000, reorganize the company, issue new bonds, and push the work to completion. The tunnel starts from a shaft on the New Jersey side of the river, which is located at Fifteenth Street, Jersey City, and it is to terminate in a shaft on the New York side at the foot of Morton Street. The total distance will be 5,400 feet, and of this, as we have said, about four-fifths have been completed. It was originally intended that the terminus on the New York side should be at Washington Square, but under the new scheme it is probable that it will be placed nearer Broadway. The cost of the undertaking has reached about $4,000,000, and it is estimated that

the tunnel can be completed by $1,000,000 more. It is likely that the engineers who have just brought to a successful completion the great Blackwall tunnel, London, will have charge of the tunnel under the Hudson, and the fact that they overcame the many serious obstacles encountered in the prosecution of that work is a guarantee that the Hudson River scheme will this time be carried to a successful termination. One of the chief causes of the abandonment was the difficulty experienced in carrying the tunnel through the bed of the river at the point where the overlying material was extremely shallow. A similar difficulty was met in the Blackwall tunnel, but it was overcome by dumping material from barges and forming a false bed to the river. The unfinished tunnel is at present flooded with water, which it is estimated can be pumped in about two weeks' time, and if the work is pushed through with vigor, it will probably take about nine or ten months to complete the whole work.

THE FASTEST TRAIN IN THE WORLD.

The distinction of running "the fastest train in the world" now belongs to the Atlantic City Railroad, which has recently inaugurated a summer schedule which includes a one hour train between Philadelphia and Atlantic City. The palm for fast running which was held for so many years by the Empire State Express had latterly been claimed by the Caledonian Railroad, Scotland, which was running a regular passenger train on a schedule of about 60 miles an hour. This, which was considerably higher than the booked speed of the New York Central train, has in turn been greatly exceeded by the railroad above mentioned.

The new train leaves Camden at 3:48 P. M. and is timed to reach Atlantic City, 55½ miles distant, at 4:40 P. M. The new service was inaugurated by a train which, in spite of the fact that it started 2½ minutes late, reached Atlantic City 1½ minutes ahead of time, the 55½ miles being run off in 48 minutes, or at the rate of 69·35 miles per hour. The train sheet shows that the 4·8 miles between Egg Harbor and Brigantine Junction were covered at a speed of 82·26 miles per hour.

Judged by the mere standard of speed, this was an excellent performance. Even if it had been maintained by a special drawing one or two coaches, it would be worthy of record; but when it is remembered that the train weighed 320,300 pounds and that much of the distance was run against head winds and in a heavy thunderstorm, the feat becomes truly exceptional.

The train was made up of one combination car, three standard passenger coaches, and a Pullman vestibule parlor car. It was hauled by a Baldwin four cylinder compound with cylinders 13 inches and 22 inches diameter by 26 inches stroke. The heating surface is 1,835 square feet, the drivers are 7 feet in diameter and the total weight of engine and tender is 226,900 pounds. The total weight of engine and train was thus about 273½ tons. It will be seen that the locomotive is a very powerful machine, its weight being about two-thirds that of the train, and the distance is short compared with that covered by the Empire State Express. On the other hand, the Atlantic City train was longer by one more car than the New York Central train, and its booked speed is about 11 miles per hour faster.

DEATH OF PROF. McCLURE.

Prof. Edgar McClure, of the Oregon State University at Eugene, fell 300 feet over a precipice on Mount Rainier late on July 27 and was killed. Every bone in his body was broken. He belonged to a party which was ending one of the most successful ascents ever made. At an altitude of about 5,000 feet the party got off the trail. McClure went in search of it. Others followed, but he warned them to go back, as the place was too steep. Just then the snow gave way under him and he fell. The body was recovered the next day. McClure was one of the most successful mountain climbers of the Pacific coast, and was to be made president of the Oregon University, says the New York Sun. The Mazamas party of fifty climbers, of which he was one, will return at once instead of camping out two weeks.

Dr. De Witt Connell, of Portland, Ore., McClure's traveling companion, believes every bone in the professor's body was broken by the fall. His face was lacerated and his skull was fractured. His blankets, which he carried in a roll on his back, were ripped into ribbons, and his instruments for testing the velocity of the wind and the atmosphere for the government were crushed to atoms. The force of the fall was so great that the body rebounded and shot off forty feet from the point where it struck the rocks.

Prof. McClure was married and about thirty years of age. He had charge of the government scientific department of the annual mountain climbing expedition of the Mazamas, the coast Alpine society. He and his friends did not go with the regular party, who numbered fifty, and which made the ascent and descent in safety, using a line. The McClure party used no life line, and that recklessness and traveling by night accounts for the accident. In the darkness the party lost the trail on the Muir glacier. McClure warned his companions to be careful and started to reach what looked like a pile of rocks, a few feet away. The rocks were a hundred feet below. Webster Pierce, of Pendleton, while looking over one of the precipices, became partly deranged and could not ascend the mountain. No barometer has been safely brought down from Mount Tacoma, and McClure, on starting to descend, promised to preserve his at all hazards.

ELEVATED TRIES FUEL OIL—UNSUCCESSFUL EXPERIMENT WITH ONE TRAIN ON THIRD AVENUE.

Engine 49 was run on a trial trip on the Third Avenue elevated road, New York City, August 2, with oil for fuel. The Consolidated Fuel Company was the promoter of the experiment.

A tank containing five barrels of fuel oil occupied the space formerly devoted to the coal bin. The oil was forced through two feeders by a pump, which sprayed it directly behind the boiler, where it was kindled. It took the boiler twenty minutes to generate 145 pounds of steam. At 11:04 the train, composed of five cars, left the Ninety-ninth Street station and started downtown on its way to the City Hall. On board the train were Hugh Moore, president of the Fuel Company; J. S. Zerbe, inventor of the appliance, and Superintendent S. B. Smith.

The motor had much difficulty in pulling the train up the hill at Seventieth Street, and when the Fifty-ninth Street station was reached it was running very slowly and two minutes behind the regular time. The fuel made a great deal of smoke, which poured into the cars in blinding clouds.

At Twenty-third Street the train was six and a half minutes late. Train Dispatcher Morrison, who was riding on the engine, came back and told Superintendent Smith that the pressure had fallen to 45 pounds and that it was impossible for the train to reach City Hall.

The cars were switched back on to the uptown track at Ninth Street and pulled uptown by an extra locomotive, which had been following the train. Mr. Zerbe attributed the failure to a leak in the oil tank.

TRIAL OF A SEXTUPLEX TELEGRAPH SYSTEM.

A sextuplex telegraphic system was successfully operated at Boston, August 2, in the presence of representatives of New York and Boston newspapers. The circuit was to New Haven and return, a distance of three hundred miles. Three different messages were sent over the wire simultaneously, and were easily and accurately received on the receiving sides.

The inventor is Thomas B. Dixon, of Kentucky, son of the late Archibald Dixon, once a senator of that State. He is a practical telegrapher.

"Other experimenters," said Mr. Dixon, "have pursued one of two methods—either they have used a vibratory current or else have subdivided the current into more than two parts. I have virtually a combination of a quadruplex and duplex wire. I send two messages over one-half of the current as a quadruplex, say at 100 volts, and the third message over the other half as a duplex, by increment—by making the current 300 volts. The great gain is in the saving of wire. We can work the sextuplex with the same current that is used on the quadruplex. We have used one quadruplex over thirteen hundred miles of wire on about two-thirds the current commonly employed. Both quadruplex and sextuplex have been used in all kinds of weather, and they do excellent work. The tests have all been made through a district where the wires were exposed to induction. The thirteen hundred mile test was on a wire that ran from Boston to Buffalo, then back to Boston; then to New Haven and back to Boston again."

THE BELGIAN ANTARCTIC EXPEDITION.

The necessary funds having been assured, the steamer Belgica, which has been fitted out at Antwerp, will sail on August 15 on an expedition to south polar waters.

The Chamber of Deputies has voted an additional credit of 60,000 francs for Gerlache's south polar expedition.

Lieutenant de Gerlache, of the Belgian navy, organized and will lead this expedition. The Belgica has been specially strengthened for ice navigation and arranged for the convenience of scientific workers. The vessel is provisioned for three years. A laboratory has been built on the deck, and the expedition will be particularly devoted to geological and zoological research. This Belgian expedition will be the only one in the Antarctic field.

MAGIC: STAGE ILLUSIONS AND SCIENTIFIC DIVERSIONS.

The interesting new book, entitled "Magic: Stage Illusions and Scientific Diversions," will be published about September 1. For further particulars our readers are referred to our advertising columns. A large, four page illustrated circular is now ready for distribution, and will be mailed free to any address.

MOVING TO THE NEW LIBRARY, WASHINGTON.

The old Congressional Library at Washington has been closed, and the work of removing the books to the new building has been commenced, a work which it is expected will take about three months. The moving, according to Assistant Librarian Spofford, embraces "the loading of books from their present shelves in the Capitol building into boxes, separately numbered and ticketed, so as to indicate the place they will occupy in the ironstacked rooms of the new library. Each division will be preserved in distinct order, and such rearrangement and classification as the detailed treatment requires will be gradually worked out. It is proposed to leave in each library division and subdivision enough shelf space for several years' growth, so that no further removal of books need be made for a long time to come."

Supt. Green has an ingenious arrangement for removing dust from the books before they are placed upon the new shelves. He has attached an ordinary rubber hose to the air compressor of the pneumatic tube system, and, to use his language, will just "turn the hose" on the dusty books. Instead of water, however, a stream of air, under heavy pressure, will do the work. At the end of the hose is a broad nozzle, one-sixteenth inch by four inches, which will enable the air to play on the books in a stream the shape of a brush. "It is likely," said Mr. Green, "that the general public has very little idea of the number of people who visit the new congressional library building. All during the spring and early summer our visitors averaged 1500 a day. Even now with the city emptied by the summer exodus, the number is about 1,000 visitors a day."

Assistant Librarian Hutchinson says the new library is "the most gorgeous public edifice in America. It has the largest golden dome in the world, with 10,000 square feet of surface. It is lighted by 1,800 windows; there are 25,000,000 bricks and $1,250,000 worth of granite. Congress appropriated $6,000,000 for its cost. The builder turned over $300,000 to the Treasury of this money when he handed over the keys." In the rotunda or reading room, over which Mr. Hutchinson will preside, there will be room at the tables—allowing four feet for each person to spread himself in—for 260 readers at one time, and this is exclusive of the alcoves for students pursuing some special line of research. On the great dais in the center will stand the librarian and his clerks, taking orders for books and telephoning to the men in the distant book stacks. From the stacks the books will be sent to the reading room in traveling trays like those employed in retail stores for conveying bundles and money. A tunnel three feet underground and containing an endless chain railway connects the library with the Capitol, so that when a member of either house needs a book, even in the middle of a speech, it can be supplied at a moment's notice. The library of Congress ranks sixth among the libraries of the world in its present contents. France has the largest, England next; then comes Russia, and Germany follows with her libraries in Munich, Berlin and Strasburg, the last named holding almost equal rank with ours at Washington.

SALICYLIC ACID IN FOOD.

It is well known to-day that salicylic acid is a powerful antiseptic. As such it retards the action of organized ferments like the yeast plant and putrefactive bacteria. It hinders and prevents fermentation, the souring of milk, and the putrefaction of milk. Its action upon unorganized ferments is even more powerful. It completely arrests the conversion of starch into grape sugar by disease and pancreatic extracts. This action is directly opposed to the process of digestion, and, were there no other reason, the use of salicylic acid should be universally condemned. These facts in connection with salicylic acid have been recognized very thoroughly in legislation. The use of the acid has been condemned by most of the European countries having pure food laws. In France it is forbidden by law. In Austria, Italy, and Spain it cannot be used without the danger of incurring a heavy penalty, and all South American states having pure food laws have absolutely forbidden its sale. The laws of many of the States forbid its use. By a decision of Mr. Wells, the dairy and food commissioner, the use of salicylic acid in food is prohibited in Pennsylvania.

I wish to call attention here to another fact in connection with the use of salicylic acid which is of extreme importance, viz., the sale of preservalines, preservatives, etc., under various high-sounding names, intended for use in private families. A number of these, claimed to be perfectly harmless, are on the market, but actually contain salicylic acid as the main ingredient. The conscientious and careful housekeeper should put an absolute veto upon the use of any such compound. There is rarely any need for them, since, when pure fruits and vegetables are used and the proper directions for sterilizing by heat, etc., are carried out, canned or preserved goods of all descriptions can be prepared that will remain in good condition for years without the aid of any preservative.—The Sanitarian.