GOLD IN NORTH CAROLINA.

By Frederic Moore.

North Carolina is the pioneer gold State of this country.

Besides seeking the salvation of souls, the early European visitors to the South Atlantic States were impelled by the desire to acquire gold. There is nothing remarkable, therefore, in the fact that the early narratives report the presence of gold all along the section. As early as 1513 Ponce de Leon reported that a cacique in Florida had an abundance of it; but this, like most of the subsequent reports, was founded more on hope than actual discovery. Lack of success killed the hope in the early gold-seekers, and the search for the precious metal was given up until 1799, when a man named John Reed found in Carribus County a nugget weighing 17 pounds. And not even from that year does the beginning of gold mining in this country date, for it was four years after the find—during which time Reed used the nugget as a door prop—that it was ascertained to be gold.

When this discovery was made, further search was immediately instituted, with the result that many more nuggets were found, the largest of which weighed 28 pounds. In a year gold hunting had fairly begun, and from that time until 1827 all the gold produced in this country came from North Carolina. But the total amount during that time, so far as records go, was of only $110,000 value.

Up to 1825 all the gold came from washings. In that year a successful excavation was made in Montgomery County; then valuable quartz veins were located in Mecklenburg County, and from that time the mining of gold proceeded.

It was because the streams of the State became exhausted, in so far as the methods of extraction then in use were concerned, that attention was turned to vein mining. When, in 1834, the streams were practically abandoned, newly-located veins gave fresh impetus to the business. The South reached the highest point it had yet attained as a result. In the forties $1,000,000 of gold was produced, far the largest portion coming from North Carolina, though South Carolina, Virginia and Georgia were by this time producing gold. In the fifties a decrease set in in the production of the metal, with a practical cessation during the civil war. Immediately thereafter, however, the interest in gold mining revived; but the maximum output, about a quarter of a million dollars, has never been a factor in the production of the country (now between $70,000,000 and $80,000,000) since the western territory was opened.

The virgin ground where placer mining was operated in North Carolina undoubtedly yielded handsome returns; for many of the old tailings, imperfectly worked, have been washed over a second and a third time—even to a seventh—with a profit.

Through this placer mining, the first mode of getting gold in North Carolina, many of the mechanisms now universally used—for instance, the rocker and the "Long Tom"—originated. In the past, placer deposits have been worked with considerable energy and system. In the South Mountain Mining district there has been much work done in a small way, chiefly by men and women working singly or in small gangs, the pan being the most common means of separation.

Occasionally these people strike a pocket with from $5 to $100 in it, but for the rest they subsist on trifling quantities of gold and great expectations. It is said that an average of 60 or 70 cents per day can be made by a skillful and industrious workman. The women, beginning in childhood, develop great acumen in selecting the best gold-bearing land and become very expert in panning it.

At present very few placer mines are in operation. The Crawford mine, in Stanley County, four miles south of Albemarle, was opened on a fresh bed in 1892. The gravel consists of angular quartz and slate fragments in a clay matrix, and occurs in a narrow stream bottom about 250 feet wide. Its thickness is from one and a half to two feet and the overlay is from two to four feet deep. Owing to the scarcity of water, a method of washing, out of the ordinary, was pursued. A wooden tank of 200 cubic yards capacity was placed at an elevation above the stream bed. At one end was set up a standpipe, 30 feet high, which was supplied by a steam pump from a reservoir below. The gravel was hauled to the top of the tank in tramcars and dumped. Here it was washed by a discharge from the standpipe. A line of riffled sluice boxes ran from an opening in one side and near the bottom of the tank. The gold was collected from the tank bottom and the riffles in the sluices.

The gold occurs almost exclusively in the shape of nuggets. In April, 1895, an 8-pound nugget was found, and in August one weighing 10 pounds. The cost of working averaged about 50 cents per loose cubic yard.

The Mills property at Brindleton, Burke County, was worked over ground that had already been covered by the early hunters. Other placers of some importance are the Sam Christian mine, Montgomery County, and the Parker mine, Stanley County. In the South Mountain region the mining of large veins has been attempted to some extent, and several shafts have been sunk to a depth of 100 feet. The ore from these shafts looks good and is said to assay extremely well, $15 or $20 being asserted as the average, and much higher values being sometimes given. Though mining is sporadic throughout the State, fine specimens are frequently found, and very often the assay office in Charlotte shows ores running above $60 per ton. The ores can be mined and reduced for $3 per ton or thereabout, and it seems incredible that veins 18 inches or more in width, averaging $10 a ton in assay, should be allowed to remain idle. For economic reasons veins should be prospected with local capital. If reasonable quantities of gold with an average of $10 can be put "in sight," i. e., exposed on three or four sides, plenty of capital from the commercial centers will be forthcoming.

The veins are, as a rule, of comparatively moderate dimensions as compared with the great quartz lodes of California, but they are often more abundant within a given area, and within the zone of oxidation portions have proven exceptionally rich in free gold.

The configuration and physical character of the country is not such as to favor the accumulation of large bodies of placer gravel, yet, occurring as it does in the unglaciated region, the surface material in the vicinity of the outcrops of veins, as a result of the secular disintegration, is often rich enough to be worked profitably as placer deposits. When the limit of the zone of oxidation has been reached, the sulphuret ores are generally found to be of too low grade to be profitably amalgamated, and this treatment is sometimes further complicated by their association with tellurium. Hence the many abandonments of mining when the workings were still comparatively shallow, and the impression has gotten abroad that gold is not found at greater depths.

There is less positively known with regard to the geology of the rocks in which gold veins occur, and the relations of the deposits themselves, than there is of any other gold-bearing deposits in the country. It is probable that to this ignorance, combined with a want of technical knowledge on the part of so many of those who have attempted to mine gold, may in a great measure be attributed the many financial disasters that have brought gold mining in the State into ill repute.

When the geology of the belt becomes better known, and the mining falls entirely into the hands of those who have not only sufficient capital but also the necessary practical knowledge, the gold yield of the State will be considerably larger and gold mining will undoubtedly prove to be profitable.

THE COAL FIELDS OF THE UNITED STATES.

The third part of the Twenty-second Annual Report, 1900-1901, of the United States Geological Survey, dealing with Coal, Oil, and Cement, is now passing through the press. The volume is the answer to many requests made to the Geological Survey for information concerning the coal supply of the country, and is based on geographic, geologic and trade relations. The introductory part, by Dr. Charles Willard Hayes, Geologist, discusses briefly the distribution, development, production, and markets of the coal fields of the United States.

The total coal areas foot up some 280,397 square miles, exclusive of Alaska, and exclusive also of vast areas of lignite coal not strictly comparable with the higher grade anthracite and bituminous coals. Of this total area approximately 55 per cent is probably productive. The rank of States in production differs greatly from their rank in coal area. Thus Pennsylvania, ranking seventh in coal area, was easily first in production in 1900, with a little over 132,000,000 short tons out of a total production of about 241,000,000 tons. The same is true of the Northern Appalachian field as a whole, which, third in area, ranks first in tonnage and value of product, a result due to proximity to market, suitability of coal to fuel requirements, and relative quantity of workable coal per square mile of productive area. The anthracite field consists of several long, narrow basins in eastern Pennsylvania. Several small basins of Triassic rocks in the Piedmont region of Virginia and North Carolina, containing an aggregate of about 1,000 square miles, are coal bearing.

The Appalachian field, subdivided into northern and southern, extends from northern Pennsylvania 850 miles to central Alabama, embracing portions of nine States, and containing approximately 70,800 square miles, of which about 75 per cent contains workable coal. The Northern Interior field lies wholly within the State of Michigan with an area of approximately 11,000 square miles. The Eastern Interior field, lying in Indiana, Illinois, and Kentucky, has an area of 58,000 square miles. It is estimated that about 55 per cent of this area is productive. The Western Interior and Southwestern fields form a practically continuous belt of Coal Measure rocks, extending from northern Iowa southwestward 880 miles to central Texas and embracing an area of 94,000 square miles. The Rocky Mountain fields extend from the Canadian borders southeastward some 1,200 miles, with a maximum breadth of 500 miles and aggregate 43,610 square miles. The San Carlos field, El Paso County, Texas, and the Eagle Pass field, extending from Uvalde County, Texas, 75 miles to the Rio Grande and across into Mexico, properly belong to the Rocky Mountain field. The Pacific coast coal fields have a total area of about 1,000 square miles, with the most important deposits in Washington, a few deposits in extreme western Oregon and in central and southern California.

The lignite coal deposits, which are not treated of in this series of papers, embrace about 56,000 square miles in Montana, the Dakotas, and Wyoming; and then, in an area of about equal extent, they run in a narrow belt from the Georgia-Alabama line nearly to the Mississippi, and then west of the Mississippi in a broader belt, from Little Rock southwestward through Arkansas, Louisiana, and Texas.

The Appalachian field presents certain well-marked types of coal which for particular purposes are regarded as standard. The coal of the Connellsville district of the Pittsburg bed is the standard for coking coal, as the Pocahontas coal of West Virginia is the standard for steam coal. The Northern Interior field, of Michigan, contains only bituminous coal, a fair steaming fuel. In the Eastern Interior field, the largest part is a soft bituminous fairly good steam coal; then there is the block coal in Indiana; and also numerous small areas of cannel coal, valuable for gas making and for domestic purposes, in Kentucky. The coal of the Western Interior fields is fairly uniform in composition and makes a fair steaming fuel. In the Southwestern Interior field the coal varies from a soft bituminous in northern Texas to semi-anthracite in Arkansas. In the Rocky Mountain and Pacific fields the coal varies from lignite to anthracite. Owing to location and character of coal, the northern Appalachian field controls the coal trade of the Eastern States, sending its coal to the seaboard by the trunk-line railroads. It competes with the interior coal fields to the west by way of the Great Lakes and the trunk-line railroads, and to the south by way of the Ohio River. The Southern Appalachian field supplies the South Atlantic and Gulf States as far west as the Mississippi, and Dr. Hayes thinks this field will in time support a large export trade to Central and South American ports, and, after the Isthmian canal is built, to Pacific Coast ports also. The markets for the coal of the Northern and Eastern Interior fields are chiefly within their own limits, and they are in more or less competition with the Appalachian coal, and with the natural gas of Ohio, Indiana, and Kentucky. The Western Interior coal field supplies its own markets and those toward the north and west, where it must compete with the Rocky Mountain fields. The Southwestern Interior field has but little competition except from fuel oil in a large territory toward the south and west. Practically all the coal fuel used by the southern transcontinental railroads, as well as the Texas roads, comes from the north Texas and Indian Territory fields. Considering the entire region between the Appalachian coal field and the Rocky Mountain fields, there is observed a general movement of the coal westward, a tendency due chiefly to the higher grade of the eastern coals, but also in part to the generally lower westward railroad freights and to the ease of westward water transportation. The region west of the one hundredth meridian—about half the area of the United States, Alaska excepted—contains less than 20 per cent of the coal fields. The development of the coal resources of Alaska is as yet in the experimental stage. Practically all the information at present available concerning these Alaskan coal fields is summarized by Mr. Brooks in his paper, which should form an invaluable aid in future prospecting and development.

WELLS OF SOUTHERN CALIFORNIA.

In the Series of Water Supply and Irrigation Papers, the United States Geological Survey has in press, but not yet published, the "Wells of Southern California" (Nos. 59 and 60), by Mr. Joseph Barlow Lippincott. In his letter of transmittal Mr. F. H. Newell, Hydrographer in Charge, remarks: "The results are instructive, as showing what may be done in other parts of the United States under favorable conditions of climate and soil, and have peculiar interest in any consideration of the extent to which the arid land can ultimately be redeemed by irrigation."

The region discussed is the San Bernardino Valley in Southern California, which has an area of 563 square miles, and lies south and west of the Sierra Madre and San Bernardino Mountains. Riverside and Redlands are the centers of fruit production. Up to elevations of 2,000 feet the relatively high lands are free from frost, and the relatively low lands are subject to it. The distinctive crop of San Barnardino Valley is citrus fruits. Oranges predominate, followed next by lemons, and of late years the grape fruit has become a popular product. Olives, almonds, prunes, apricots, peaches, pears, and wine, raisin, and table grapes, are all grown to perfection in this district. In the eleven years prior to 1898 Riverside shipped nearly seven million boxes of oranges, an average annual income of $1,000,000.

Water is the lifeblood of the land. Without it this valley would become a semi-desert. The rain clouds from the Pacific Ocean are condensed against the 6,000 to 11,000-foot elevations of the Sierra Madre and San Bernardino Mountains, in the winter time usually in the form of snow, which feeds the streams up to about May. Mr. Lippincott classifies the water supply as surface streams, underground water, and storage reservoir water. The Santa Ana and other mountain streams have brought down detritus and built up deltas in the valley. The winter floods gradually disappear in flowing over these deltas and, sinking down, form reservoirs of artesian water of unknown but great capacity. In addition to the winter floods the summer flow of all the streams from San Antonio Creek to Mill Creek is diverted and used for irrigation purposes, and probably 50 per cent of it sinks into the ground and reinforces the water plane. This large underground reservoir slopes toward Santa Ana River, the most important stream of Southern California west of the Coast Range. It drains a total area above Rincon of 1,657 square miles; 971 square miles of the basin are mountainous. The controlling outlet of this great underground reservoir is at Rincon, where there is a larger body of water flowing during the summer than at any other place in California south of the Tehachapi Mountains, except along the Colorado. If an area of gravel of 500 square miles should be charged to a depth of 300 feet—a fair average depth to assume for this valley—its storage capacity would be 32,000,000 acre-feet of water. These figures suggest the enormous capacity of this great underground storage reservoir of San Bernardino Valley. It has been charged with waters through a long cycle of years by the floods described. Hence measurements made in the summer of 1898 showed that there was almost three times more water rising in the central portion of the valley than there was entering the valley from the mountain drainage basin.

Mr. Lippincott holds, therefore, that properly located development works near Rincon, permitting the lowering of this water plane each season 21 feet over an area of 1,000 acres, should yield from 1,500 to 2,000 miners' inches of water. He thinks the proper method of procedure should be to divert, for the creation of pumping power, the entire flow of the Santa Ana River, near the Auburndale bridge, about the first of May, and to return the water to its natural bed at the close of the irrigation season. His conclusions are: That a large percentage of irrigation water returns to the channels of the streams; that the movement of the water through the soil being exceedingly slow, this return water from irrigation will be a permanent source of supply; that water of this character is now making its appearance on the lands near Rincon; that it is impossible to determine the amount of water that could be gathered by collecting galleries on these lands; that the stream measurements show a loss between Rincon and the head of the Santa Ana River of about 800 miners' inches, which might be saved by a lined conduit extending down the canyon about 7.4 miles; that a power canal, water wheels, electric machinery, twenty pumping plants, and the gathering flumes necessary for 2,000 miners' inches of water could be constructed at an approximate cost of $75,000.

Numerous tables, eleven plates, and fourteen figures illustrate the discussion.

Mr. Lippincott's contribution concludes with a brief description of the California Portland Cement Company's works at Colton in this valley, the only Portland cement plant on the Pacific Coast. With abundant crude materials of calcspar, clay and almost chemically pure limestone near at hand, and with the Los Angeles petroleum for cheap and excellent fuel, the company is enabled to produce a first-class cement for about three-fourths the price of foreign cements. This is of great consequence for the development of the irrigation interests of the valley.

STORAGE OF WATER ON KINGS RIVER.

KINGS River drains the western slope of the Sierra Nevada in Fresno County, California, from Mount Whitney on the south to Mount Goddard on the north. Fully 80 per cent of the drainage basin is now included within the boundaries of the Sierra Forest Reserve, a matter of prime importance to the irrigated lands below, for it means the conservation of the stream. The river debouches from its mountain drainage basin upon the plains of Fresno, Kings and Tulare counties, sometimes spoken of as the Kings River delta, which are near the geographic center of the State, and present great variety of climate and soil. Fresno and Hanford, the principal towns, are about 200 miles distant from San Francisco and Los Angeles.

Lumber, gold, copper, petroleum, grain, oranges, lemons, many varieties of deciduous fruits, grapes, raisins, wines, and brandies are produced in this region in commercial quantities. There are more than 500,000 deciduous fruit trees in Fresno County. There are about 40,000 acres of vineyards. It is the great raisin district of California. The citrus belt, as is the case in Southern California, is a narrow strip of land at the base of the mountains.

Irrigation is necessary for all varieties of agricultural products, grains possibly excepted. There are about 625 miles of main irrigation canals, covering 380,000 acres of land on the Kings River delta. A good water right adds about $50 per acre to the value of the valley lands, and about $90 per acre to the so-called frostless foothill lands, where the citrus fruits, the most valuable crop, could be raised with an increase of the present supply of water, which has been diverted chiefly to the lower lands. The present combined capacity of the Kings River canals is stated to be approximately 4,000 cubic feet per second; in September, 1898, the supply fell to about 145 cubic feet per second. During the last season the profits from the irrigated districts around Fresno were in excess of $2,000,000. Land without irrigation supply sells here for $10 per acre; the same land with a good water right sells for about $60. Hence the importance of the water power development considered in this report, which is on the Middle Fork of Kings River, above all diversions for irrigation or for storage. Kings River can be relied on, in spite of occasional seasons, for a great water supply, draining as it does 1,742 square miles of area from banks of perpetual snow.

In the investigation of the Kings River basin a reconnoissance party under Mr. E. G. Hamilton, Topographer from the United States Geological Survey, reported upon reservoir sites, four of which were then surveyed by a party under Mr. E. H. Green. Of these four sites Mr. Lippincott thinks that two should be utilized, and that storage work should be begun by building the Clark Valley reservoir with an 85-foot dam, and should be followed by the construction of a 140-foot dam at the Pine Flat site.

The Pine Flat site, on the main Kings River, five miles below Trimmer, just above the diversions of all irrigation canals, has an elevation of 600 feet, and the dam would cost $1,425,600. This reservoir could be used as a governor for filling the Clark Valley reservoir, and then for holding the surplus water. Mr. Lippincott's conclusions are: That the observed flow of Kings River for the season of 1897-98 may be taken as a minimum; that these minimum years will probably occur about once in ten years; that there will be enough water during November to February, inclusive, to fill every year the Pine Flat reservoir with a capacity of 78,197 acre-feet; that in nine out of ten years there will be enough water to leave the Pine Flat reservoir full for use after July 1; that water that would be stored in the Pine Flat reservoir is water that would otherwise be lost; that the Pine Flat reservoir would irrigate the most valuable lands in Fresno and Tulare counties, now dry and unproductive; that the cost of storage would be $18.23 per acre-foot, and the earning power of the reservoir fully double that amount.

The Clark Valley site is in Fresno County, sixteen miles east of Sanger, and has the stage road to Millwood and the arroyo of Wahtoke Creek through the center of it. The elevation of the base of the dam is 400 feet. It is proposed to fill this reservoir by a diversion canal 53,600 feet in length, with headworks above the mouth of Mill Creek and at the Pine Flat dam site. Two additional dams would be needed to block the valley completely up. The total cost, including supply canal, etc., would be $1,331,025; the total storage capacity would be 120,499 acre-feet of water; and the cost per acre-foot of water would be $11.05. Mr. Lippincott thinks that the Clark Valley dam should eventually be raised to 105 feet with a storage capacity of 217,196 acre-feet, and shows by a table that, with this larger dam, there would have been only one year out of eleven when both reservoirs could not have been filled.

The report then shows that the cheapest water supply in the valley can be obtained by pumping with electric power generated by the river itself before it reaches points of diversion or storage, provided the pumping plants are operated at least half the time. A good location for the power house between the Middle and the South Forks, at an elevation of 1,980 feet, with an available head of 650 feet, was found by Mr. E. H. Green, who estimated the total cost of construction at $271,975, and the mean minimum horse power at 7,386. The supply of water in the valley for pumping, based upon reports from over 800 existing wells, was investigated by Mr. Louis Mesmer, who concluded that 300,000 acre-feet could be obtained with certainty by pumping from the water plane of the Kings River delta. The transmission of power and the operation of the pumping plants was investigated by Mr. Lewis A. Hicks, who concludes that the annual pump output would be 328,500 acre-feet on the basis of use for 328½ days, at a cost of $10.50 per acre-foot produced.

By these means 200,000 additional acres of irrigated land could be added to the community.

Mr. F. H. Newell, Hydrographer in Charge, says in his letter of transmittal: "The situation on Kings River is to a certain extent typical of that along a number of important streams of the West, and as a result of this investigation it is believed that the reclaimable area can be greatly extended by the construction of storage works, and also of power plants by means of which, through electrical transmission, pumps can be operated at small expense out on broad valleys. The demonstration of these conditions will prove one of the most important steps toward the transformation and utilization of the fertile but arid lands."

AGRICULTURE IN SIBERIA.

RICHARD T. GREENER, United States commercial agent at Vladivostock, Siberia, has submitted a report on agriculture and farm machinery in Eastern Siberia, which, in part, is as follows:

"Enoch Emory came to Siberia from Cape Cod forty years ago. He was the pioneer American merchant, and now has stores at Nikolaefsk, Habarofsk, Blagoveschensk, and Moscow. Gov. Grodekoff said that he has increased the working force of the Amur territory 20,000 men by the introduction of American labor-saving machinery. Most of the supplies under the head of emigrant stores are furnished to the local government by him.

"American agricultural machines have enjoyed such an established reputation that it has long been a paying business to imitate them. The complaint now is that many cheap and inferior machines, mostly made in Germany from American models, are on the market. Since the retaliatory tariff took effect, February 7 (20), 1901, many American machines come via Germany, it is asserted, all American marks being carefully obliterated.

"At present there is no great demand for American machinery. The market is well stocked, crops are bad, money is scarce, the government is closing down on credit, and the condition of the Siberian peasant farmer is deplorable. Efforts are being made to teach the peasant how to farm. In the United States the foreign immigrant learns by everyday example rather than by theory. The Siberian peasant is not used to severe and unremitting labor; he has few wants and many holidays. Lately some highly colored reports have reached us from America as to what Siberia was capable of doing in an agricultural way. It is suggested that American flour mills on the Pacific Coast will soon be closed in consequence of the millions of acres here ready to be devoted to cereals. An uncertain climate, imperfect machinery, and unreliable labor are not factors for successful competition with the United States.

"Notwithstanding the cheap transportation offered emigrants and the development of virgin soils, famine seems a periodical visitor, and it is here to-day. The central governments are literally besieged with clamors for bread, for medicine, for work, grain, hay—anything. Tomsk, Perm, Kerson, Yaronej, Khalkinsk, all join in this demand. It is safe to say that the United States need have no immediate fear of competition from this quarter, whether it be in grain or machinery, canned goods or cotton goods, production of gold, or building of ships. The new tariff has caused a rise in the price of all necessaries. It has made imperative an imperial ukase allowing employés of the Ministry of the Interior one month's pay. The appropriation has already been made."

THE NAMES OF STARS.

WHO first gave stars their names? Greek mythology, to be sure, credits their naming to Prometheus. It is most remarkable that among peoples equally cultured, star myths resemble one another strikingly. The earlier myths of classic Europe take us back to a time when people had reached a point of civilization about as high as that of the American Indian. The myths and traditions of individual nations are almost identical, at least in spirit.

The folklorist, far more than the historian, realizes the touch of nature that binds all people together. The earliest Greeks of whom we have any record personified the stars as beasts. If we cross to South America, we find that the old Peruvians also worshiped the stars under the names of beasts. The name of the "Great Bear" is as old as Homer and perhaps older. Curiously enough the North American Indian calls the same constellation a "Bear." From what did the coincidence arise? Surely, not from any likeness in the stars themselves.

That the stars were once human beings is an idea that also prevails among the Eskimos. Can it be asserted that Eskimos and Bushmen and North American Indians have simply imitated primitive Orientals? Greece, to be sure, probably borrowed her myths from Egypt, but it is hardly credible that Australia should borrow its star knowledge from Greece. We must rather conclude that the personification of the heavenly bodies is an inherent tendency of the early stages of culture, and that by similar processes of observation and reasoning they have arrived at similar results.

To quote from a writer on this subject, "From savagery up to civilization there may be traced in the mythology of the stars a course of thought, changed indeed in application, yet never broken in its evident connection from first to last. The savage sees individual stars as animate beings, or combines star-groups into living celestial creatures, or limbs of them, or objects connected with them." Nature presents one school for man's education; she trains Assyrian, Hellene, and Polynesian in the same manner. Every nation passes through its stone age to its age of metal, and the order of folk-tales is as regular as geologic strata. Assuming also that man started from one geographic center, it may be conceded that he carried some root-ideas with him as he spread across the world. One of these root-ideas was apparently a glimmering of mythologic astronomy.

It is conceivable that the naming of stars took place before anything like practical astronomy was cultivated. It is usually thought that the Chaldeans were the first to originate the science, and to them is attributed the division of the sun's course into twelve equal parts, marked by his passage through the signs of the zodiac. But perhaps the arrangement of the zodiacal signs should be credited to the Egyptians. . . . A tale told by the natives of Australia is that the Pleiades were a queen and her six attendant damsels, but an ardent lover ran away with the queen and her maidens have ever since mourned her absence. There is certainly no lack of imagination in the myths of these Australasian natives, whose civilization was too backward to enable them to survive the contact with white culture. They conceived the sun as a woman of loose character, flaunting her red mantle, given her by an admirer, in the face of the moon, a man. There is a wilder touch of poetry in many of the aboriginal myths than in those of classic times; but we must remember that the classic myths have undergone centuries of polishing at the hands of cultured poets and romancers. The fancy of comparative moderns has never been lacking in interpreting the names of stars and constellations. One writer has supposed that the Dolphin was the fish that swallowed Jonah; and the Dragon has been imagined to be the serpent of Paradise. The sign of Lyra has been explained as the lyre of Orpheus, the harp of David, and the manger of Bethlehem; while Leo has, of course, been claimed as the Lion of the tribe of Judah. Perseus, says one interpreter, is David bearing the head of Goliath. We must be very careful not to attach weight to any such explanations. The names of stars are for the most part of immemorial antiquity. In many cases they are developments of man's early ideas of totemism and of god-ancestry. They are generally older than the tales that are now quoted with them; and, even where there is a coincidence in name and legend, we must believe rather that they sprang from a common tendency in man, than that they come from one common stock of tradition.

RARE FINDS IN ARMENIA.

THE interest of the German government in the Bagdad Railway has led it to dispatch important missions to Armenia for the purpose of making archæological explorations in Armenia. The first of these expeditions was intrusted to Dr. W. Belck alone, and in 1898 and 1899 he was accompanied by the Assyriologist Dr. C. F. Lehmann. The report of these expeditions has just been issued, and the results to science are most important. The first indications of a civilization in the mountain-lands bordering on Lake Van were made known by the French traveler Dr. Schultz, who copied a number of inscriptions on the rocky walls of the fortress of the city of Van. Schultz, unfortunately, was killed by the Kurds, but his diaries and copies of inscriptions were recovered and published by the French government in the Journal Asiatique. Layard, who visited Armenia in 1849, copied a number of inscriptions, and Rassam, who made several visits to the country and excavated at Toprak Kaleh, the ancient palace of the Vannic kings, copied or took casts of several more, but the work of the German expeditions has greatly increased our knowledge of the country. The members collated all inscriptions previously copied, and increased the material for the study of ancient Armenian history by nearly two thousand lines—including the discovery of a most important and fairly lengthy bilingual inscription in Assyrian and Vannic. The most important result of the expedition has been to define clearly the extent of this empire, which had almost entirely disappeared from the field of history. The capital city was Van, on the lake of that name, called Dhuspas—the Tosps of the classics—but the royal residence seems to have been at Toprak Kaleh, called at a later period "Rusas town." The northern boundaries of the empire are uncertain, but several inscriptions were found in Russian Armenia. On the east the inscriptions were found as far as Lake Uromiyeh, and one on the rocky heights near Rowandiz, on the summit of the Pass of Keli-shin, 12,000 feet above sea-level. This inscription was first discovered by Sir Henry Rawlinson, and was set up during the joint reigns of the Kings Ispunis and Menuas, about B. C. 800. Westward, on the rocks at Palu, on the Euphrates, near Malatiyeh, the inscriptions of Menuas are also found.

ARCHÆOLOGICAL DISCOVERIES IN GREECE.

THE recent archæological discoveries in Greece and the islands adjacent have been so numerous that a proper understanding of their general significance has been rendered difficult. Interest is at present centered in the islands of Leucas and Ithaca, because of discoveries which may shed a new light upon the home and surroundings of Odysseus. From various parts of the country come reports of discoveries, although in many cases these are mere fabrications, and, when they are not, considerable difficulty is found in securing government possession.

A rather important field is being developed on the island of Crete. Seven tombs have been unearthed within the last few months bearing every evidence of Mycenaic origin and containing skeletons of men and women, marble statues, gold rings and bracelets, and various other ornaments and figures. One held a very remarkable carving in carnelian, rectangular in form, but slightly rounded on its long sides, and surmounted by two striking figures. The one represents a man in a kneeling position grappling a huge bull by the horns; the more remarkable of the two, however, is the figure of the Babylonian demon of the storm, the monstrous Typhon or Typhoon, after Assyro-Babylonian art, standing, with open mouth, upon its hind feet and holding aloft between its fore-feet the figure of an animal. Upon its back it bears