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PRE-EUROPEAN GOLD MINING AT ASHANTI, GHANA

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Editor's Note: The following article is a review of gold-mining conditions, methods and administration operating at Ashanti before the British arrived and started mining in earnest in 1879. The text was prepared several years ago and it was discussed with the editor then. In what appears to be a revised version the late Nick Laffoley here presents a survey of mining conditions which must have operated in many other parts of Africa but of which few records exist.

Readers interested in later developments are referred to Nick Laffoley and Colin Laidler's earlier article on "The Stamp Mills at Ashanti" in the *Bulletin of the PeakDistrict Mines Historical Society,* Vol. 12, No.3, pp. 1-18; (1993). Readers may also like to see the fine photographs of the Ashanti golden court regalia in the *National Geographic Magazine*, October 1996, pp.37-46. T.D.F.

EARLY HISTORY

Gold has almost certainly been won from Ghana, formerly the Gold Coast, since before the beginning of recorded history. It is possible that some of the gold of the pharaohs of Egypt was transported across the desert from West Africa, although the quantities may not have been great due to the problems involved.

Overland routes across the Sahara from West Africa to the Mediterranean were probably in existence very early, and the Phoenicians and Carthaginians sailed round the west coast of Africa in the 5th and 6th centuries B.C., possibly reaching the Gold Coast (Junner, 1973). It is also recorded that the Roman Empire obtained gold and ivory from African lands south of the Sahara (Perry and others, 1985).

Present day Ghana contains an elaborate mix of languages and ethnic groups In the southern part of the country the Akan dominate the area west of the Volta. The Akan are of particular importance as the areas they dominate contain the bulk of the known gold deposits in Ghana. The matrilineal Akan may be divided into numerous linguistically and culturally similar groups, which include the Asante (Ashanti), Brong, Twi (Twifo), Wassaw, Denkyira, Sehwi, Asgin, Adansi, Akyem (Akim), Akwapim, Akwamu, Ahanta and Fante. According to oral tradition, the Akan may have arrived in southern Ghana as a result of migration from the north. Indeed, the name 'Ghana' which was chosen for the country at independence in 1957 was based on the assumption that the much of the present population is descended from the people of ancient Ghana, a southern Sudanic empire that flourished from about 800-1000 A.D. in what is now Mali. However, these days it is considered that the bulk of the Akan people have occupied their present locations for as long as three thousand years, and that the tradition of the northern origin arises from the arrival of intrusive ruling aristocracies from the north in the fifteenth and sixteenth centuries (Cole and Ross, 1977).

Archaeological evidence suggests that a number of industries were originally imported from the areas to the north of Ghana. At Begho, which flourished between 1350 and 1750, pottery goldweights have been found along with other artifacts which indicate a Mali influence and follow weighing schemes used far to the north (Cole and Ross, 1977). It has also been suggested that the working out of gold deposits in Mali prompted the search for further sources to the southeast towards Ghana.

The first major Akan state was Bono Manso, which developed with impetus from Begho around the thirteenth or fourteenth centuries. It was later to be followed by Akwamu, which appears to have risen to power through the influx of northern rulers who were subsequently assimilated. Akwamu started in about 1510, reaching its peak in the second half of the seventeenth century. Akwamu has been credited with originating the semi-military government that characterised most of the successful Akan states, and in particular the Ashanti. The Adansi was another important Akan state, which was founded about 1550, and by around 1650 there were many other kingdoms in southern Ghana, the dominant one being the Denkyira. There were also a number of small Fante coastal states who had made contact with and developed trade relationships with the Europeans in the preceding century.

Trade was of course one of the major factors influencing the development of the Akan states, with the gold resources of the area being of fundamental importance. The gold attracted traders from the north, and also the Europeans on the coast. No less important to the northerners may have been the trading of cola nuts, the only stimulant permitted under Muslim law (T. Secretan, oral communication).

THE EUROPEANS IN THE GOLD COAST

A Venetian explorer, Cada Mosto, made two voyages along the west coast of Africa in 1455 and 1456, and he stated that the gold coinages of Spain, Portugal and Italy during the 14th and 15th centuries was entirely derived from West African gold. However, the first undisputed record of gold from the Gold Coast dates from 1471, when Juan de Santarem and Pedro de Escobar, guided by Moors captured in Senegal, landed at the mouth of the Pra River and started a trade in gold dust (Junner, 1973)

After this date, a vigorous trade sprang up between West Africa and Europe, not just in gold, but also in slaves, ivory and other goods. The Portuguese were later joined by the British and in 1553 Captain Thomas Wyndham landed the first gold dust from the Gold Coast in England - 150 pounds worth about £10,000. He was closely followed by John Lok in 1554 who obtained some 400 pounds of gold dust, and in 1555 and 1556 Towerson obtained gold and ivory from a number of locations along the coast of the Gold Coast (Junner, 1973). Subsequently the Dutch and the Swedes also started trading and there were to be numerous conflicts during the ensuing centuries during which the

countries abandoned their trading posts and forts one by one until by 1872 only the Btitish were left.

In the early years after the start of trade between the Gold Coast and Europe, some mining was undertaken by the Europeans. Fernao Gomes opened a mine at Abrobi Hill, near Komenda which was worked intermittently until about 1621 when the workings collapsed and the mine was abandoned. The Portuguese also obtained much gold from the vicinity of the Lower Ankobra River, and they opened a mine on a quartz vein at Aboasi in about 1630, but the workings were destroyed by an earthquake on 18th December, 1636 (Junner, 1973). It was only late in the 19th century that any serious gold mining enterprises were undertaken by Europeans (Junner, 1973).

In the 14th and 16th centuries it is obvious that the natives of the Gold Coast possessed large amounts of gold which had probably been accumulated over a long period, However, apart from its value as ornamentation they apparently had little value for it, despite treasuring it, and readily sold it in large quantities. Early writers recount that gold was readily traded for items such as brass, copper, shells and cloth (Junner, 1973). Early writers also recount that iron was prized and was scarce in the coastal regions. It was presumably imported, and as late as 1819 it appears that the Ashantis did not know how to make iron, although their interior neighbours, the Dagombas, did (Junner, 1973).

The precise sources of the gold won by the local people, are difficult to deduce, but in the 18th century most of the gold came from the Denkyera, Akan, Ashanti, Akim, Aowin, Wassaw, Gwira and Kwahu areas. In 1868 the British were depending almost entirely on the Ashanti for their gold trade, although small amounts came from Denkyira, Wassaw, Aowin and Apollonia (Junner, 1973). It is also unclear as to who actually worked for the gold: Junner (1973) stated that in the coastal areas trenching and open cuts were the favourite method of working deposits and that this work was undertaken by the Apollonians, Ahantas, Gwira and Wassaws who may have learnt the methods of working from the Portuguese and Dutch. In southern Ashanti, where pit workings were more the dominant mining method, they were also made by the Apollonians, Gwiras and Ahantas, and, according to oral tradition, the Denkyira working as slaves.

THE RISE OF THE ASHANTI NATION

In parallel with the conflict between the Europeans, so conflicts developed between the Akan states, exacerbated by the introduction of firearms as a trading item (Cole and Ross, 1977). During the 17th century there was no Ashanti state. Kumasi was only one of the several chiefdoms of what is now the Ashanti region, all independent of each other but under the hegemony of the Denkyira. Osei Tutu, the chief of Kumasi, took the initiative in challenging the Denkyira late in the 17th century (Sarpong, 1974).

In challenging the Denkyira, Osei Tutu was assisted by the greatest of the fetish priests, Okomfo Anokye. One Friday he called together an assembly in Kumasi which was attended by all the paramount chiefs, and then brought down a golden stool from the heavens. He then collected clippings of nails and hair from all the chiefs and queen-mothers present, mixed them into a concoction and smeared the stool with it. The rest of the mixture was then given to the leaders to drink and Okomfo Anokye told them that from then onwards their souls were in the stool, and that the destruction of the stool would mean the destruction of the Ashanti people (Sarpong, 1974). Thus started the myth of the Ashanti Confederacy in 1701, which was to last nearly two hundred years until finally broken by the British in 1900 (Lloyd, 1964).

The Golden Stool of the Ashantis is still in existence, and although its heavenly origin may be a myth, it was and still continues today to be a focal symbol of the Ashanti people, Through the years the Ashanti people have often gone to extreme lengths to avoid having the Stool fall into enemy hands. For instance, in 1896 the Ashantis allowed their King, Prempeh I to be deported rather than allow the Stool to fall into the hands of the British by fighting to defend him (Sarpong, 1974).

On the formation of the Ashanti Confederacy Osei Tutu started by raising a war exehequer from the markets of Kumasi by washing the top layers of soil from the markets for its gold content, which had accumulated there as a result of centuries of gold trading. The Ashantis then proceeded to drive the Denkyira southwards over the Pra and Ofin rivers. Other tribes, such as the Agni and the Baule of Ivory Coast may also have migrated from the area at the same time (Warren, 1986). After the defeat of the Denkyira, Osei Tutu and Okomfo Anokye began to build up the Ashanti Confederacy, the primary feature of which was its decentralisation. The family clan and tribe survived as individual entities, and the role of the Asantehene, the King of the Ashantis, was to make territorial considerations rather than kinship the basis of State control (Warren, 1986). Osei Tutu himself was killed in 1730 at the river Pra: according to oral tradition he was standing on a rock in the middle of the Pra shouting abuse at the Denkyira on the south bank, who shot him. The rocks can still be seen today when the river level is low, just to the west of the bridge at Assin Prasu.

The victory over the Denkyira may have had important implications for the organisation of the gold mining industry in the Ashanti region. According to oral tradition, the Ashantis subsequently used enslaved Denkyira labour to undertake much of the gold mining. Oral tradition also suggests that the Denkyira may also have developed (or inherited from the north) many of the traditional mining techniques that were used so extensively in the Ashanti region, and are still used, albeit on a much lesser scale by artisanal workers throughout Ghana.

ORGANISATION OF ASHANTI MINING

Little has ever been written on the subject of how the Ashanti people organised their mining activities, and most of the following account is based on verbal history. The Ashanti (and Denkyira) 'Nations' were feudal societies which still exist although in much diminished form due to the British colonial period and later national independence in 1957. At the head of the Ashanti confederacy is the King, the *Asantehene* (*hene* = chief), below whom are the regional Paramount chiefs *(Omanhene)*. On the next level down are the territorial chiefs *(ohene)*, and they in turn appointed representatives as caretakers to govern the villages under them (*odikro*). Yet lower are the family heads (*abusua panin*) and then the household heads (Warren, 1986).

The King, Paramount Chiefs and the Chiefs all had a retinue of sub-chiefs. The titles of many of these chiefs were related to household and battle formations and fighting. Thus there were the sub-chiefs of the right and the left flank (*nifahene* and *benkumhene*), the rearguard *(kyidomhene)*, and most importantly from the mining point of view the chief of the household (*gyasehene*), to name but a few. These chiefs were recruited from the level below, and apart from their obvious functions acted as

advisers to the chief, as well as discharging various religious and social duties. In addition individual clan chiefs (heads of families) were also a part of the advisory council.

The *gyasehene* was a very important office as he was the head of the *ahemfie* or palace and was in charge of a number of attendants ranging from eunuchs (*adabra*) through drummers and horn blowers (*asokwwafo*) to cooks (*soodofo*) and executioners (*abrafo*) (Warren, 1986). The *gyasehene* also had control over the treasurer and sub-treasurer (*sanahene* and *afotosanfo*)

In the past, society could be divided into four classes, royalty (anybody descended from the founder of a town or village), free commoners, pawns and slaves, A pawn (*awowa*) was a person given by a debtor to a creditor as a security for what he owed, on the understanding that when the debt was repaid the pawn would be returned. Slaves were not allowed to mix with other men or enter the Chief"s Palace, and they were expected to work harder and undertake the dirty work. Four types of slave were recognised: the *akoa*, who were under voluntary servitude, or who were under the power of another person; the *odonko*, who was the true slave - a non-Akan purchased specifically to work as a slave; the *dommum*, who was a foreign prisoner of war or a tribute; and the *akyere* who was a slave that had been condemned to death for an offence, but was saved until a sacrifice was required. The first three classes of slaves could marry, own property (even their own slaves), could swear an oath and become heir to their masters (Warren, 1986). This latter possibly arose as an insurance to prevent families becoming extinct (Rattray, 1955). It is probable that at least in the early years of the Ashanti kingdom, many of the workers in the mines would have been *dommum*, possibly Denkyira- later on, an increasing number of *odonko* may have been utilised.

The *gyasehene* is thought to have been the key organiser in the mining fields. Mining seems to have operated on three principal levels:

1. Professional miners working mines on a regular basis from which they derived a living, either in groups or assisted by slave labour.

2. Operations run by individual families, almost entirely worked by slaves with only a minor overseer influence. The distinction between this and the first group is mainly a matter of degree and scale of the operation.

3. Community operations (communal labour) carried out for short periods during war or other times of need by the whole community.

Verbal tradition maintains that in cases (1) and (2), the gold won was taken to the *gyasehene* who would remove any nuggets, which were the royalty of the Stool. A third of the gold dust was then taken for the paramount chief or king, and another third went to the treasury of the Stool. (The 'Stool' refers not to the chief but to the office that he holds. In the larger sense it can also refer to the entire community overseen by the Stool holder). The remaining third of the fine gold was the property of the miner. Land, mining and timber rights were until recently the property of the Stool and were allocated by the chiefs and council. Only land rights are still awarded in the traditional fashion, but this practise is also likely to lapse in time.

The concept of the Stool was very important. There was no such thing as a wealthy chief, as everything that came to the Stool became Stool property. Should the chief be destooled (removed from office), then in the past he was generally banished and only allowed to take one wife, a small boy as a slave and some gold dust (Warren ,1986). This is in line with the Akan concept of land and ownership. Land is not thought of as being a commodity which can be owned, bought or sold. The land is the unalienable possession of the people, and the ancestral spirits or *samanfo* are the true landowners, with the living landowners the trustees of the land for the dead as well as their tenants. Stool land was probably originally family land, and stool land can be augmented or decreased in a number of ways such as conquest (*konim*) or escheat (*awunyyadie)* (Warren, 1986). Land has considerable spiritual associations and value for the Ashanti, and the complex subject is discussed in detail by Rattray (1955). As far as we can ascertain the mineral wealth of Stool land was also vested in the stool and was to be worked for the benefit of the Stool. Many countries these days have mineral laws based on the same precepts.

In the case of community operations, these were only undertaken in emergency situations, and all the proceeds except a 'living allowance' went to the Stool, chief, or paramountcy as required by the circumstances. In times of war gold to pay for weapons, powder and levies was needed in quantity. Twice during the wars with the Denkyira, Osei Tutu, the then *Asantehene*, had the Kumasi market cleared and the top four inches of soil washed to collect the gold dust that had been spilled during trading. On each occasion over 1000 ounces were recovered. Traditionally the contributions to war expenses *(apea'tuo*) were levied after the war and not before (Rattray, 1955). Numerous other levies (*etuo*) are recorded, and presumably communal operations would at times have been undertaken to discharge these obligations. (This is reminiscent of the gold rush days in Dawson City in the Yukon, where saloon keepers would spread canvas under the floorboards to catch the spilled gold dust, and bartenders earned more than the average miner by panning the bar and floor sweepings at the end of every day).

TRADITIONAL MINING METHODS

Many of the traditional mining methods can now only be inferred. However, clues can be gained from the practices currently employed by the local small-scale workers - the 'galampsey'. In addition, in 1991 a film was made about Ashanti Goldfields Corporation, and in order to set the present mining operation in its historical context, some of the exploration workers rehabilitated some old workings and demonstrated how their ancestors would have worked the operation.

Mining techniques: The majority of Ashanti workings consist of small bellpits accessed by vertical shafts from above. In some cases they coalesce to a certain degree, and extensive backfilling was undertaken to extract the maximum possible amount of ore. In some areas tunnels up to 100m long were opened up underground by joining a series of shafts as is indicated by the uneven floor levels. These tunnels must also have had benefits for lighting and ventilation.

Numerous styles of shaft can be found. The commonest type are small cylindrical shafts with small hand and toe holds in vertical rows. Diameters are nearly always small and just sufficient to allow a person to pass up and down. In a few cases the shafts are enlarged and modified to allow a worker to carry a bag of ore up from underground (see below). In some operations larger shafts were constructed and took the form of big square descending steps. These may be of late date (possibly Denkyira), as this technique is still used today by some small-scale operators. In a

few instances shafts may have been developed upwards from underground working areas.

Tools: Small stone axes abound in all the mining areas. These are locally called God's axes (*Nyame Ekuma*), and are made of fine-grained igneous rock. It is assumed that they were lashed to the end of wooden poles, or morticed into the end of bamboo poles, and used to dig the soil and decomposed rock with a spearing action as all the tool marks seen in the old workings are straight. The curved marks that would arise if the tool was swung (as in Derbyshire coffin levels) have not been observed. In harder ground mauls may have been used, but on the whole hard rock in any quantities appears to have defeated the miners.

Access and hoisting: Baskets for hoisting ore were woven out of raffia palm and then lined with palm leaves. They were hoisted to surface using single or plaited lengths of creeper. To raise and lower baskets, two men would stand facing each other on two logs laid across the shaft collar, thereby keeping the basket in the centre of the shaft and not allowing it to strike the walls.

In some instances the vertical shafts, in addition to toe and foot holds, were provided with spiral shelves on which to place baskets on the way up to surface. Ladders were made out of bamboo or notched logs, or alternatively wooden stemples were emplaced. Vertical rows of foot and hand holds are also common, and the method may have been dictated by local availability of materials or personal preference.

Ventilation, lighting, timbering and pumping: Ventilation was natural, as presumably was lighting. No evidence has been found of lamps or blackening underground. No timbering was used except to stand over the shaft for hoisting purposes. The workings normally stop at the water table, but in one instance the workings have gone below the water table, and the water must have been bailed from the workings. In alluvial workings, operation of the deeper workings must have been confined to the dry season.

Targets and planning: There were three main targets, as far as can be ascertained. These were stone line enrichments of gold at the base of the soil profile, gold in alluvial gravels, and the weathered expression of mineralised lodes and veins. The stone line and alluvial operations can be impressively extensive, especially in areas of low grade granite mineralisation and in large river flats. It is difficult to estimate original grades as the mining in what we presume to have been high grade areas is particularly thorough, but they were probably in general low or very low, with occasional exceptional areas. Evaluation of one partially worked stone line shows the gold to be very erratically distributed, with occasional particles up to 2mm being extracted from otherwise very low grade samples.

Surveying of the distribution of pits demonstrates that the pitting was obviously very organised. In some alluvial areas two sets of pits can be clearly discerned - one set sunk in lines across the valley, and a (presumably) later set following the paystreak defined by the first set.

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APPENDIX: MINING METHODS at ADOMANU ADIT AND PROCESSING OF ORES

Editor's note: the following is a slightly edited version of a pencil-written note on an experiment in reproducing early mining methods found amongst the late Nick Laffoley's effects.

During the making of a film some of the Ashanti Goldfields employees were involved as extras. The site chosen was an adit driven through an extensive pit field into an open stope beneath a series of pits. The stope was about 12 m long by 5 m wide. The roof arched to the walls with an average height of 1.5 m though this may at one time have been 2 m or more as the floor was covered by debris washed down from the pits.

The stope appeared to have worked on a"stone line" deposit of alluvial nature. The stone line or pay zone lay just below a laterite capping where it was in contact with a much-weathered body of sandy decomposed granite. Large, up to 2 mm, particles of gold have been found at this horizon.

The workers were asked to set up a mining operation as it would have been carried on by their ancestors. First, a suitable shaft was found, the bush around it was cleared and two logs laid over it to stand on. A basket was woven from raffia and palm leaves; this was then attached to a long vine of the liana type and was raised and lowered in the shaft by two men standing facing each other on the logs at the collar, thus keeping the basket in the eye of the shaft and not striking the walls. Access underground was by stemples set in the shaft sides, two lines on opposite sides being used in this area. The tool used for mining was a simple sharpened stick used either like a hoe to work up floor material or like a spear to break material from the walls. Numerous old stone tools have been found in these mining ares: most are of a type locally called God's axes (*Nyame Ekuma*). Made of granite, diorite, dolerite or jasper, they were carefully ground to a chisel shape with a tapering shank. It would be logical to suppose that they could be fitted into the end of a branch of bamboo to act as a handle, as none which we have found have been more than 10 cm long.

In the case of working hard "reef" stone, grinding was needed. Here a slab of sandstone about 30 x 40 cm was used as a lower stone, the upper being a hand-held block 10 x 5 x 5 cm. These blocks had a taper showing that they were reversed from time to time to even the wear and maintain an easy grip.

Washing of the ore was carried out using a calabash, half a gourd, about 25 cm in diameter using a swirling motion rather like a battea (?) as still used in S. America and Malaya. An unusual variant of this is a high-sided conical pot used in the Kibi/Kwabeng area; here a violent swirling action is used.

Smelting of the gold was and still is carried out by local artisans who use a small circular charcoal hearth blown by bellows of goat skin mounted over a drum-like chamber, feeding the tuyeres which are made of clay rolled round a reed. The reed chars and burns out during firing to leave a clay pipe to conduct the air to the hearth. Crucibles, some of them of great delicacy, are also fashioned from fine river clay and have a distinct three-cornered configuration at the pouring lip. Similar crucibles of larger size are still used in the brass and copper manufacturies of North Africa. The triangular head makes it less likely that the crucible will slip through the tongs during lifting and pouring. It is likely that the fluxes used were sand and wood ashes as borax does not occur in the area and is a fairly recent introduction to European metallurgy.

Colin Laidler.

The following was in note form only.

Grades - very low to exceptional
Shafts - At Sibi with steps or stemples - very small.
At Kasa gunnises opened from shafts.
At Lindos evidence of haulage.
At Jakobu reef big square steps.
Processing . calabash, carved bowls, grinding stones.
Tunneling - previously not expected but Lindos, Adomonu, Brenkoso and especially Jakobu disprove this. The latter has a tunnel 300 yards long; worked by a series of shafts admitting light from the surface as well as ventilation; floor levels often uneven where pits joined.
Targets - often stone line alluvial and colluvial deposits indistinct. Jakobu tunnel suggests prospecting for reefs. Kosaminu open workings and drive with gunnises.
Tools - chisels - marks straight not curved like coffin levels.
Mauls - for breaking hard ground.
Baskets - woven raffia lined with palm leaves.
Ropes - creeper either plaited or single.
Ladders - bamboo or notched logs; stemples or in big shafts - spiral shelves.
Lighting - no evidence of lamps or blackening found.
Timbering - none except logs across shaft.
Pumping - no evidence.