

Asian Journal of Geographical Research

2(1): 1-19, 2019; Article no.AJGR.47079

The Botany of Mungo Park's Travels in Africa, 1795-1806

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/AJGR/2019/v2i130075

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Complete Peer review History: <http://www.sdiarticle3.com/review-history/47079>

Original Research Article

Received 22 October 2018

Accepted 11 February 2019

Published 22 February 2019

ABSTRACT

Mungo Park journeyed through West Africa during 1795-1797 and 1805-1806. The first journey was ostensibly purely geographical whereas the second journey was geographical plus the examination of British trade possibilities with the interior. His main brief was to discover the source and outlet of the River Niger. On both journeys he departed from the current Gambia, through Senegal and Mali the first time, and on to Niger and Nigeria the second. He was the first European to see the Niger, at Segou (Mali), and noted its eastward flow (prior speculation considered it flowed westwards). Botany was not in his brief but on both journeys he noted the vegetation and its use. He brought new facts to Britain's intellectual establishment including describing the preparation of indigo dye and its use in spinning and weaving. His 'discovery' of the shea butter tree – given the specific epithet *Butyrospermum parkii* – is his outstanding contribution to botany. He also contributed to science the locust bean *Parkia biglobosa* and another indigenous multipurpose tree *Pterocarpus erinaceus*. Many of Park's plants are important in regional agroforestry systems and continue to provide food and non wood forest products to the benefit of people and livestock.

Keywords: Biogeography; West Africa; River Niger; ethnobotany; endemic species; botanic taxonomy.

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1. INTRODUCTION

Born near Selkirk on 10 September 1771, Mungo Park studied medicine and botany at Edinburgh University. He travelled to Sumatra as Assistant Surgeon on an East Indiaman in 1792 whence he returned in 1793. Aged 24, Park (Fig. 1) was chosen -- with help from Sir Joseph Banks -- by the African Association to explore central/west Africa. His brief, essentially, was to solve the problem of the Niger River -- source, direction of flow and termination point. This enormous water course had never been seen by a European until Park reached it at Segou some 100 km east of Bamako, then the capital of the native Bambara kingdom on 20 July 1795.

On the first (1795-1797) of two journeys he discovered and described many new facts about West Africa [1]. In this respect he invented far fewer fictions than his near contemporary James Bruce who had searched for the source of the Nile twenty years earlier [2]. On his return, encouraged by the African Association, he published, to instant success, a narrative of his travels (Fig. 2) [1]. His observations on the regional geography, geology and climate were

coupled with detailed, sometimes idiosyncratic, descriptions of the social and domestic life of the inhabitants along the Gambia River and the upper Niger. In 1797-1805 he retired from public view and worked as a Scottish doctor and religious minister. He returned to West Africa in 1805 but met with even worse conditions and treatment from the local populace than during his first voyage. He was drowned at the rapids of Boussa (now northern Nigeria) in the river he was exploring whilst fighting off a band of villagers who resented his presence. Fortunately he had sent diaries of part of this journey to the coast with his servant who travelled with a passing caravan. These, with a detailed biography of Park by John Wisner (Fig. 3), were published in 1815 [3] when the outside world still knew little of the Niger and its environs.

This paper describes and analyzes the two journeys made by Park at the end of the 18th and beginning of the 19th centuries. Where possible it compares the practices of the indigenous peoples some two hundred years ago with those of the early 21st century with regard to the use of crops and the natural environment.



Fig. 1. Portrait of Mungo Park (Frontispiece of the first volume of the travels)

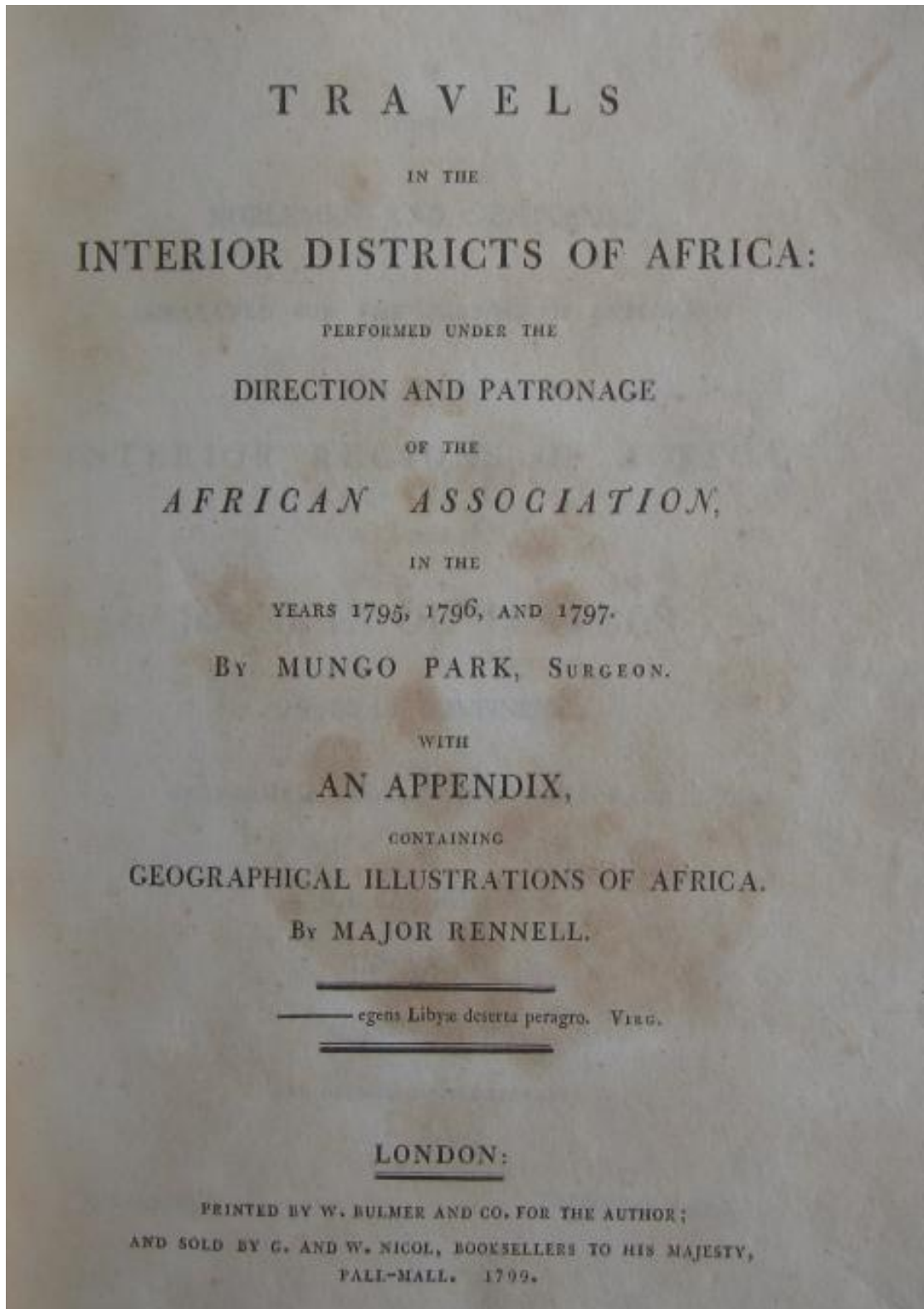


Fig. 2. Title page of the First Voyage, 1799

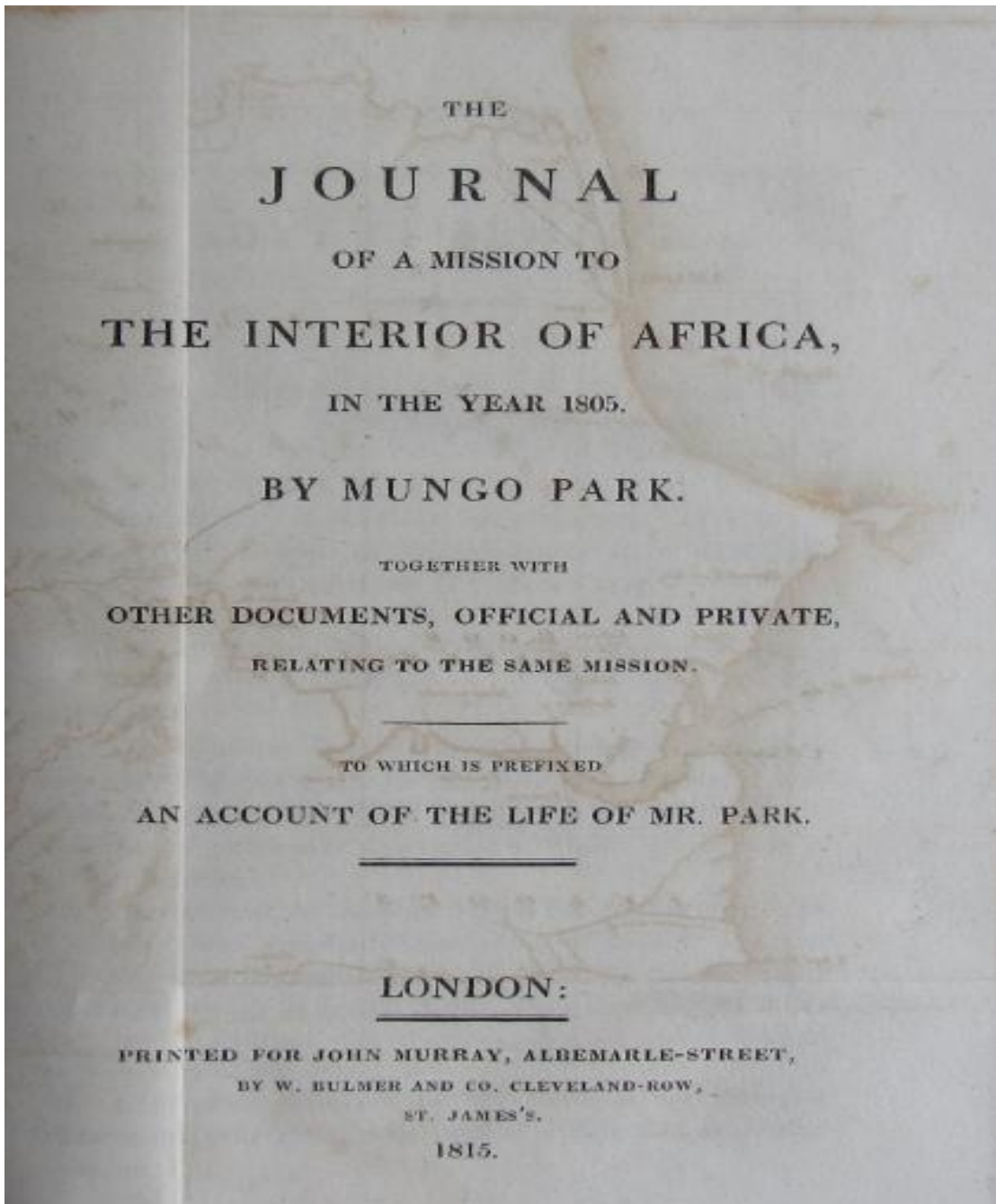


Fig. 3. Title page of the Second Voyage, 1815

2. THE FIRST JOURNEY (1795-1797)

Sailing from Portsmouth on 22 May 1795, Park's ship anchored at Jillifrey (now 'Juffure') on the River Gambia's north bank on 21 June. He left Jillifrey on 23 June, crossing the river to Vintain (now 'Bintang'). He noted the amount of beeswax in the market but there was little honey

as this was used to make mead. No mention of the food plants of bees is made but the first reference to vegetation is made shortly afterwards when he describes the riverside as covered with impenetrable mangrove thickets [1: p. 6]. Four mangrove species occur along the Gambia: *Rhizophora racemosa* G. Mey., *R. harrisonii* Leechman, *R. mangle* L., and

Avicennia germinans (L.) Stearn. The last two dominate the lower reaches but relative composition changes in response to local environmental (salinity, depth of flood) conditions. Park left Vintain on 26 June and sailed up river to arrive at Jonkakonda on 2 July. He met Dr Laidley and was invited to stay at his trading post ('factory') at Pisania 16 miles up river. He described Pisania as 'a small village in the king of Yany's dominions, established by British subjects as a factory for trade, and inhabited solely by them and their black servants' [1: p. 7]. During most of August and September, Park was confined to his bed with a fever but latterly made short walks, described as botanical excursions. He noted the crops, principal among which was Indian corn *Zea mais* [*Zea mays* L.], two kinds of *Holcus spicatus* which locals called 'soono' and 'sanio' [*Pennisetum glaucum* (L.) R. Br., Bulrush or Pearl Millet], *Holcus niger* 'bassi woolima' [*Sorghum bicolor* (L.) Moench, Sorghum], *Holcus bicolor* 'bassiqui' [also *Sorghum bicolor* but a different variety or cultivar] and rice [*Oryza glaberrima* Steud. as its centre of origin is the Niger inundation zone in central Mali].¹ In smaller gardens in settled areas, onions, calavances [probably *Lablab purpureus* (L.) Sweet, hyacinth bean], yams [*Dioscorea* spp., one or both of two semi-cultivated yams, *D. bulbifera* L. and *D. cayenensis* Lam], cassava [*Manihot esculenta* Crantz], groundnuts ['peanut', *Arachis hypogaea* L.], pompions [probably bottle gourd or calabash *Lagenaria siceraria* (Molina) Standl., still a widely-used vegetable: the hard outer skin serves as spoons, containers and as a resonator in musical instruments], gourds (possibly Park distinguishes the ripe from the vegetable form of the "pompion"), watermelons [*Citrullus lanatus* (Thunb.) Matsum. & Nakai] and some other esculent [= edible] plants. Cotton [*Gossypium* spp., one or both of *G. herbaceum* L. and *G. barbadense* L.] to produce clothing, and indigo [possibly *Indigofera* sp. but more probably *Philenoptera cyanescens* (Schum. & Thonn.) Roberty] for producing a blue dye, were also grown [1].

The first express botanical mention refers to trade in sweet smelling gums and frankincense and to 'shea-toulou' (literally tree butter), paid as a tax along with iron to local chiefs by travellers traversing their territory [1: p. 26, 35]. 'shea' (*Vitellaria paradoxa* C.F.Gaertn, formerly *Butyrospermum parkii* (G. Don) Kotschy, then

Butyrospermum paradoxum (Gaertner. f.) Hepper) is common in English for both the tree and the butter and is Manding for the plant and its product. In French the tree is 'karité' – and paradoxically (no pun intended) is used for the butter by English-speaking Gambians – and the butter as 'beurre de karité' from the Woloff and Fulani (fula, fulbé) name for the tree.

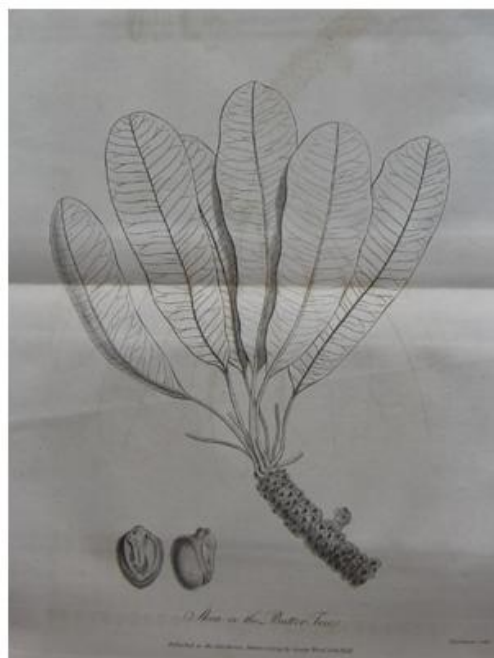


Fig. 4. Park's drawing of the leaves and fruit of the shea butter tree

Introduced to Western science by Park at the end of the 18th century shea butter had been traded across the Sahara since the 14th century. The butter, made from ripe nuts (Fig. 4), is tasteless and odourless when prepared traditionally and is used in cosmetics and cooking. Mali is the major producer and exports to neighbouring countries (Fig. 5). Wrapped in green leaves it is resistant to oxidative rancidity and keeps for long periods if not exposed to air and heat. The butter is increasingly used industrially in cosmetic, pharmaceutical and nutraceutical applications [4]. The edible pulp comprises 50-80 percent of the fruit and can be eaten raw or lightly cooked when slightly overripe. The flowers are cooked as fritters. Caterpillars of the moth *Cirina butyrospermii* A. Vuillet feed exclusively on the tree, are rich in protein and are dried and sold as food in regional markets. Shea-nut cake is a useful livestock feed and leaves and young sprouts are an

¹Binomials and other information in square brackets [..] are Author's insertions where Park did not give or did not know the Latin names,

important forage. The wood is an excellent fuel with a fierce burn [5]. The tree provides nectar for bees [6] and the butter is smeared on sun-dried fish in Bambara to prevent spoliation by moisture [1: p. 274].

The journey inland began definitively on 2 December when Park departed from Dr Laidley's hospitable mansion. A concrete pylon (Fig. 6) marks whence he set out but there is no evidence of the Pisania trading post nor of Jonkakonda. A detailed map produced later is marked by all his night stops: these are reasonably accurate for latitude but not so for longitude (Fig. 7). Park had the services of a 'negro servant' named Johnson, a former slave. A second servant was provided by Park's erstwhile host. He had a horse and two donkeys and at various times and for various distances had other companions. On his second day he travelled through a 'boundless forest' [1: p. 33].

Botanical references are scattered throughout the narrative. Wooden stakes and prickly bushes surrounded the houses but the 'outward fence has suffered considerably from the active hands of busy housewives, who pluck up the stakes for firewood' [1: p. 36]. On 8 December at Kolor (now Senegal, north of the border with present-

day Gambia, 20 miles west of Tambacounda) Park 'observed, hanging upon a tree, a sort of masquerade habit, made of the bark of trees, which I was told, on inquiry, belonged to Mumbo Jumbo'. On 11 December at Koojar (east of Tambacounda) Park drank beer brewed from corn wort (his *Holcus spicatus*), malted in a manner similar to barley in Great Britain, hops being substituted by the bitter root of a plant whose name he had forgotten [1: p. 42-43]. Next day, he saw a tree with the native name 'neema taba', of singular appearance as it bore innumerable scraps of cloth tied to the branches, formerly to inform passers-by that water was close at hand but which by the time Park saw it was simply a custom. The banks of the Neriko, a tributary of the Gambia, were covered with mimosas and there are several other mentions of mimosa *passim* (these 'mimosa' are either or both of species of *Acacia* or *Albizia* as African *Mimosa* are all very small). Sweet smelling gums in small packages weighing about 1 lb (454 g) were traded and when thrown on hot embers produced a very pleasant odour, used by the Mandingoes to perfume huts and clothes [1: p. 58]. [Park did not identify the gum plants but they would be resins from *Acacia* spp. or *Commiphora africana* (A.Rich.) Endl., Burseraceae, and still used for these purposes].



Fig. 5. Malian shea butter on sale in Birikama market, The Gambia (13 August 2014)



Fig. 6. Park monument at site of former Pisania village whence he set off on his first journey on 2 December 1795 and his second on 4 May 1805 (24 July 2014)

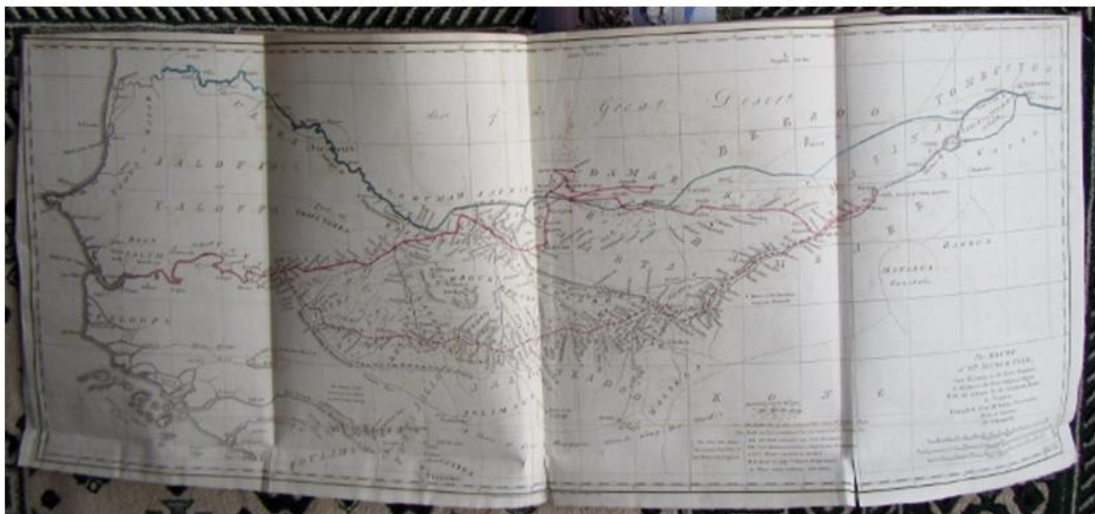


Fig. 7. Map of Park's route on his First Voyage, 1795-1797

The 'taba' referred to by Park is *Cola cordifolia* (Cav.) R.Br., formerly Sterculiaceae, now subsumed into Malvaceae, known in English as the cola or kola tree. Ranging from northern Nigeria and Niger westwards through Mali to Senegal and The Gambia it grows to 25 metres, has a large spreading crown and is planted in villages for shade. The large nuts, chewed as a stimulant, assuage hunger and are the first food eaten when the fast is broken every evening during the Muslim holy month of Ramadan. Eating cola together is considered an expression of intent when a suitor requests permission of the family of the girl he wishes to marry [Sheriffu Janeh, personal communication]. Cola nuts also provide income when sold in small markets (Fig. 8).

Returning to the agricultural domain, Park thought it singular that the Falémé river banks – a major tributary of the Senegal river which Park crossed about 30 km south of their confluence – were covered with large corn fields (because on 21 December the dry season was well

advanced). He noted this cereal, 'manio' to the natives and used to make 'kouskous' and which he identified as *Holcus cernuus*, as different from the one cultivated in Gambia [1: p. 51]. He had identified this as *Sorghum bicolor* earlier but this was a different variety or cultivar. *S. bicolor* is a major Sahelian food crop whose multiple varieties vary considerably in agronomic characteristics. Many are drought resistant, establish with little moisture and can become dormant during water stress periods. One type – evidently the one Park met – is particularly apt for 'falling flood' cultivation, using soil moisture and progressively adapting to the lowering water table as the dry season advances. This cultivation type has been practised for thousands of years and is extant along all West African rivers [7,8]. On 27 December, Park's party rested at Gungadi, west of the River Kokoro about 15 miles from its confluence with the Senegal where he noted some date trees [these are not true 'dates' *Phoenix dactylifera* L. but *P. reclinata* Jacq., a wild relative common in this area].



Fig. 8. Cola nuts on sale in Tambacounda (Senegal) market – the smaller fruit bottom right are tamarinds (8 August 2014)

Slow progress was made over the next two months as Park was detained and robbed by every village chief. On 12 February 1796 he planned a short day's journey so the team amused themselves picking and eating edible fruits growing by the wayside. Approaching the substantial town of Kemmoo, the capital of Kaarta, 30 miles south of the Senegal river it was noted that a radius of two miles had been cleared of wood for building and fuel [1:p.92-93]. Bundles of dry grass hay were stocked as horse feed in case the town was besieged.

On 14 February the caravan saw some locals gathering 'tomberongs'. Park describes small yellow farinaceous berries with a delicious taste that he knew to be the fruit of the 'rhamnus lotus' of Linnaeus. The 'lotus' was very common everywhere he went but most abundant on the sandy soil of Kaarta, Ludamar and northern Bambara where it was among the commonest shrubs [1: p. 98]. He went on to discuss its distribution and history as:

found in Tunis, and also in the negro kingdoms, and as it furnishes the natives of the latter with a food resembling bread, and also with a sweet liquor which is much relished by them, there can be little doubt of its being the lotus mentioned by Pliny as the food of the Libyan Lotophagi. An army may very well have been fed with the bread I have tasted, made of the meal of the fruit, as is said by Pliny to have been done in Libya; and as the taste of the bread is sweet and agreeable, it is not likely that the soldiers would complain of it [1: p. 98].

So that posterity should recognize the plant Park made a detailed drawing of the leaves and fruit (Fig. 9). *Rhamnus lotus* L., Rhamnaceae in the Park context is either *Ziziphus mauritiana* Lam. or *Z. spina-christi* (L.) Willd. but more likely the latter. Other *Ziziphus* species occur across the northern tropics from Senegal to India. The commonest English name for the generic fruit, a drupe, is 'jujube' from the Indian tree of that specific name but it is well known across Arabia and northern Africa by its Arabic names of 'sidr' (the tree) and 'nabak' (the fruit). The name 'Christ Thorn' refers to the wide belief that it was the twigs of this tree that adorned the head of Jesus at his crucifixion [9]. The fruit – slightly laxative and high in Vitamin C – is widely gathered from trees across its range for food and commerce. Its spiny character means it is little browsed by livestock and its hard wood has

many uses including manufacture of high quality charcoal [10].

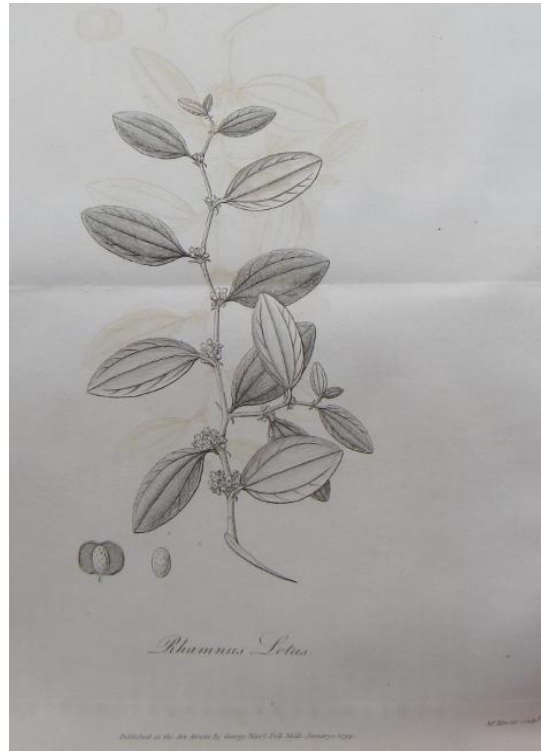


Fig. 9. Park's sketch of leaves and fruit of his *Rhamnus lotus* (*Ziziphus spina-christi*)

On 18 February 1796 Park was at Simbing (now northwest Mali at about 14°25' N latitude and almost the northernmost point of his journey) in the kingdom of Ludamar. This was possibly farther east than any European had reached in West Africa although the Irish soldier and adventurer Major Houghton had traveled up the Gambia during 1791 and tried to cross the desert from Simbing to Timbuctoo but, deserted by his guide, he either died of starvation or was killed by Moors [11]. It is also possible that early Portuguese slave traders had been this far east. Continuing eastwards, facing hostility from local notables and desertion by some of his party, he arrived at Sampaka on 4 March having met a swarm of locusts 'the trees were quite black with them' on the way [1:p.114]. A week later he collected gum which he described as an excellent succedaneum for water – they had none at this point – as it kept the mouth moist and allayed pain in the throat. On 3 April, having been a Moor captive for more than a month, he describes the custom of planting a shrub – without attempting its identity – over the grave of

a dead person and the prohibition on plucking leaves or even touching it [1:p.132].

Park escaped from the Moors but noted the deplorable state of himself and his horse with no food nor water. He was now not enamoured of the country as:

a little before sunset, having reached the top of a gentle rising, I climbed a high tree, from the topmost branches of which I cast a melancholy look over the barren wilderness, but without discovering the most distant trace of a human dwelling. The same dismal uniformity of shrubs and sand everywhere presented itself, and the horizon was as level and uninterrupted as that of the sea. [1:p. 174].

Late in the night of 3 July 'I struck again into the woods, and took shelter under a large tree, where I found it necessary to rest myself, a bundle of twigs serving me for a bed, and my saddle for a pillow'. Travelling through a mixture of 'negro' (Mandingo) and Foulah villages there is much reference to the planting of corn as this is the beginning of the rainy season: although there is no mention of which 'corn' is being planted it is certain that most would be millet *Pennisetum glaucum* (L.) R. Br.

Park approached Doolinkeaboo (now Dolonguebougou, a large Bambara village) in the afternoon of 19 July, having fallen behind his party as his horse was in poor condition. When he arrived they had already left. Obligated to spend the night he was given water by the headman – a sign of great hospitality – and hoped to make up for the toils of the day by a good supper and a sound sleep; 'unfortunately, I had neither the one nor the other. The night was rainy and tempestuous and the "dooty" limited his hospitality to the draught of water'. Next morning Park tried, without success, to obtain food from the chief. A female slave refused him corn but when the headman went to work his wife sent some meal which he mixed with water and drank for breakfast [1: p. 188].

After another night at a small village Park was away early on 21 July, and:

anxiously looking around for the river, one of them (i.e. a fellow traveller) called out, Geo affili! ("See the water!") and, looking forwards, I saw with infinite pleasure the great object of my mission -- the long-sought-

for majestic Niger, glittering in the morning sun, as broad as the Thames at Westminster, and flowing slowly to the eastward. I hastened to the brink, and having drunk of the water, lifted up my fervent thanks in prayer to the Great Ruler of all things for having thus far crowned my endeavors with success [1: p. 190].

On 23 July Park was refused audience by the king of Segou. He proceeded east towards Sansanding, hoping to get to Jenne (Djenné). At Kabba, described as a beautiful and highly cultivated country 'bearing a greater resemblance to the centre of England than to what I should have supposed had been the middle of Africa' people were collecting shea nuts. Referring to his earlier mention he notes the abundance of trees, not cultivated but growing naturally and left standing when land is cleared for crops all over this part of Bambara. The butter is made by drying the kernel in the sun and then boiling it in water. Park believed the butter, which keeps for a year without salt, was whiter, firmer and had a richer flavor than the best cow butter he had ever tasted. Shea butter production was a major industry and butter was a main trade article [1:p.202]. At Sansanding cotton cloth was also an important item of trade with the Moors in exchange for salt, beads, and coral.

Continuing eastwards Park reached Silla (now Soala), between Segou and Djenné, on 29 July. He decided, partly because of the difficulty of travel during the heavy rains, to return westwards and left Silla on 31 July 1786. In the morning of 17 August Park passed a place called Balaba – between Segou and Bamako – where he climbed a tamarind tree [*Tamarindus indica* L., Fabaceae] but found the fruit quite green and sour and remarked that the high grass and bushes seemed completely to obstruct the road [1:p. 225].

Continuing slowly up the Niger, Taffara – a village where the headman had recently died – was reached on 18 August. He thought the want of hospitality was due to this event even though he had cowries to pay for it. He had to sit under a tree on the 'bentang' (a raised platform of branches, universal in West African villages, where men and boys while away their time setting the world to rights) where he was exposed to the rain and wind of a tornado which continued until midnight. He later slept on wet grass but was still better off than his horse as the

corn he had bought was all gone and it was not possible to get more [1:p. 227].

Just before Sibidooloo on 25 August, Park was robbed of his horse and most of his clothes by a band of Foulah. He sank to the ground in despair and considered giving up his endeavors but was consoled by thinking of God, specifically because of 'the extraordinary beauty of a small moss in fructification ... not larger than the top of one of my fingers' [1:p. 244]. This tiny moss was later described and named after him as *Fissidens parkii* Mitt. [12].

Progress was again slow traveling westwards on the left (north) bank of the Niger through Koolikorro (now Koulikoro) towards Bammakoo (Bamako, the modern capital of Mali) via Kayoo (Kayou). Progress was further slowed as Park was robbed and held by Foulahs. He also stayed in some villages several days, suffering from fever [1: p. 230]. There was also famine in the land and one headman was feeding corn to several women every morning, each of whom had sold a son to the headman for 40 days of provisions. Park's horse – which had been recovered – was little more than a skeleton: it fell down a well but was rescued by means of ropes made from the vines of the 'kabba' plant [*Saba senegalensis* (A. DC.) Pichon, Apocynaceae: the bark is still much used as rope] [1: p. 245]. Towards the end of September the rains diminished in frequency and intensity but Park was stuck. In December the grass had become very dry and the leaves had fallen from the deciduous trees and:

Whenever the grass is sufficiently dry the negroes set it on fire. [...] Burning the grass in Manding exhibits a scene of terrific grandeur. In the middle of the night I could see the plains and mountains, as far as my eye could reach, variegated with lines of fire, and the light, reflected on the sky, made the heavens appear in a blaze. In the daytime pillars of smoke were seen in every direction, while the birds of prey were observed hovering round the conflagration, and pouncing down upon the snakes, lizards, and other reptiles which attempted to escape from the flames. This annual burning is soon followed by a fresh and sweet verdure, and the country is thereby rendered more healthful and pleasant. [1: p. 254].

Belatedly returning to botany, Park refers to his earlier writings about food crops and noted in all

the areas he had travelled they were much the same. He saw many species of edible roots but never saw sugar cane [*Saccharum officinarum* L. Poaceae], coffee [*Coffea arabica* L. (Arabica) and *Coffea canephora* Pierre ex A. Froehner (Robusta), Rubiaceae] or cocoa [*Theobroma cacao* L., Malvaceae] and they were unknown to the local populations. 'The pine-apple [*Ananas comosus* (L.) Merr., Bromeliaceae] and the thousand other delicious fruits which the industry of civilised man (improving the bounties of nature) has brought to so great perfection in the tropical climates of America, are here equally unknown'. Park did see a few orange [*Citrus sinensis* (L.) Osbeck, Rutaceae] and banana [*Musa × paradisiaca* is the accepted name for the cultivated hybrid of *Musa acuminata* and *Musa balbisiana*] trees near the mouth of the Gambia but was unsure whether they were indigenous or had been introduced by traders, possibly Portuguese [1: p. 254]. It is also noted that village names are sometimes related to plants and gives the example of Sibidooloo which is the town of 'ciboa' trees [*Raphia sudanica* A. Chev. Palmae, Northern Raffia Palm] [1: p. 262].

None of the plantation crops noted by Park is native to West Africa and it is not surprising, with hindsight, that they were not cultivated there. In the 21st century cocoa, coffee and pineapple remain absent or are minor crops in Park's area. The situation differs for sugar, as Senegal now produces about 900,000 tonnes of cane annually and Mali about 300,000 tonnes: small output by world standards but important locally. Most Malian production is for ethanol rather than for consumption.¹ Commercial production of bananas and oranges remains small but bananas – especially plantains for cooking – are important subsistence crops.

Attention turns to the use of plants in traditional medicine and as poisons, and:

On the first attack of a fever, when the patient complains of cold, he is frequently placed in a sort of vapour-bath. This is done by spreading branches of the nauclea orientalis upon hot wood embers, and laying the patient upon them, wrapped up in a large cotton cloth. Water is then sprinkled upon the branches, which, descending to the hot embers, soon covers the patient with a cloud of vapour, in which he is allowed to remain

¹Sugarcane in Africa - VIB http://www.vib.be/en/about-vib/Documents/vib_fact_Sugercane_EN_2017_1006_LR_singlé.pdf

until the embers are almost extinguished. This practice commonly produces a profuse perspiration, and wonderfully relieves the sufferer.

The powdered bark of various trees was mixed with food to treat dysentery but 'this practice is in general very unsuccessful.' Abscesses were lanced and treated with dressings of soft leaves, shea butter or cow's dung 'as the case seems, in their judgment, to require' [1:p. 270). Hunting by bow and arrow was chiefly a dry season occupation. Hunting arrows were not poisoned but those used in war were:

the poison, which is said to be very deadly, is prepared from a shrub called kono, (a species of echites), which is very common in the woods. The leaves of this shrub, when boiled with a small quantity of water, yield a thick black juice, into which the negroes dip a cotton thread: this thread they fasten round the iron of the arrow in such a manner that it is almost impossible to extract the arrow, when it has sunk beyond the barbs, without leaving the iron point and the poisoned thread in the wound [1: p. 274].

Women spun cotton in the dry season, deseeding the lint by laying small amounts on smooth stone or wood surfaces and rolling the seeds out with a thick iron spindle. Lint was spun with a distaff to produce a coarse but well twisted thread that made a very durable cloth. A woman with 'common diligence' could spin for six to nine garments in one year. Weaving was done by men on a loom whose principle was that of Europe but very small and narrow, such that the web was seldom more than four inches (10 cm) broad (Fig. 10) [1: p. 275].

Park's 'nauclea orientalis' has not been identified but he probably knew it from his time in Sumatra. The Leichardt tree or yellow cheesewood *Nauclea orientalis* (L.) L., Rubaceae is confined to Australia and Southeast Asia but there is no information on its use as an inhalant to relieve fever [13]. The only current African species is *Nauclea diderrichii* (De Wild. & T.Durand) Merrill, but this is confined to areas considerably south of Park's ambit. Decoctions of the bark and leaves of *Mitragyna inermis* (Willd.) Kuntze (formerly *Nauclea inermis* (Willd.) Baill.), which is present in the area are still used to treat fevers. Park's 'kono' is either *Strophanthus sarmentosus* DC, Apocynaceae or *S. hispidus*

DC [14], the former being the more likely. *Strophanthus* species produce toxic alkaloids and cardiac glycosides which act on the heart before influencing other organ or tissue and have been used to produce the drug Ouabain which is a cardiac stimulant to treat heart failure. Non-poison uses in West Africa include treatment of joint pain, head lice, eye conditions and venereal disease.

A short discourse on the local cuisine follows. In general people who were not slaves had an early breakfast of meal and water often with tamarind fruit to add a bitter taste. In the afternoon the meal was 'a sort of hasty pudding' with shea butter. Supper was rarely eaten before midnight and was almost universally 'kouskous' (couscous here is thick millet porridge -- not of *Triticum durum* as in North Africa -- and is still eaten with a sauce of local tree leaves, cassava leaves or other spinach-like plants) with a sprinkling of meat or shea butter. The principal drinks of non-Muslims were beer and mead, often drunk to excess.



Fig. 10. Native hand loom weaving still carried out by men (Basse, Gambia-Senegal border region, 28 August 2014)

After several months of idleness, a further delay for the holy month of Ramadan and numerous false starts or near starts, the group of slave traders with whom Park was to travel back to the Gambia got serious about departing. The caravan now comprising 78 souls, a small proportion of which was free, left the banks of the Niger on 19 April 1797. Traveling in a northerly direction, the group left Manding territory on 22 April and next day, according to Park's

reckoning, covered 30 miles. On 26 April they passed through a thicket of bamboo [*Oxytenanthera abyssinica* (A. Rich.) Munro, Poaceae] then stopped for the night having covered 26 miles. Some days later the company was given huts to sleep in but the headman could not provide food as the village itself had gone 29 days without tasting corn. During this time they had survived entirely on the yellow powder of 'nitta' pods [*Parkia biglobosa* (Jacq.) R. Br. ex G. Don, locust bean in English] and on bamboo seeds which when pounded and cooked tasted much like rice [1: p. 327].

The Falémé River (which had been crossed farther downstream on the outward journey) was traversed on 12 May. Now meandering westward, including a stop of four days whilst two men argued over the ownership of a woman and having to take shelter under a 'ciboa' [*Raffia Palm*] leaf because of heavy rain, the party reached the Gambia river on 28 May. Moving down river they passed through Medina and Baraconda (now Baro Kunda) and on 5 June arrived at Dr Laidley's station from which Park had departed in early December 1794. In the intervening eighteen months, Park 'had not beheld the face of a Christian, nor once heard the delightful sound of my native language.' [1: p. 350]. On 12 June Park again met Dr Laidley but was disappointed when told that no European vessel had arrived in Gambia for several months and he resigned himself to a further long stay. On 15 June, however, his luck changed when an American slaver arrived on which he embarked on 17 June. Bound for South Carolina the vessel made heavy weather downstream before turning north to Goree off the coast of Dakar to load more slaves. It was here until early October for want of provisions. The vessel made Antigua in

the West Indies after a difficult passage, Park boarded the Chesterfield Packet on 24 November and arrived at Falmouth on 24 December 1796 whence he immediately set out for London having been absent from England two years and seven months [1: p. 352].

3. THE SECOND JOURNEY (1805-1806)

Park married Alison Anderson of Selkirk in 1799 but soon solicited Sir Joseph Banks to find more exploration for him. In 1803 the Colonial Office proposed another trip to the Niger but after innumerable false starts this fell through. For some time in the United Kingdom he practiced the medicine for which he had been trained but was unhappy doing it. (On neither voyage did Park – in contrast to the missionary-explorer David Livingstone who ministered to the sick throughout his expeditions-- make any attempt to use his medical skills which may have helped his cause.) Summoned to London in September 1804, Park proposed an expedition to contribute to 'the extension of British commerce and the enlargement of our geographical knowledge'. This journey differed from his first, when he had traveled alone, as he was given a Captain's commission to lead a party of 30 soldiers, 6 carpenters (to build the two 40-foot boats he proposed), 15-20 negroes (preferably artificers) and a train of 50 donkeys and half a dozen horses or mules. He left England on 31 January 1805. There were, inevitably, delays en route and he did not get to Kayee, two days march to the west of Pisanía until 27 April. He departed Pisanía on 4 May, on a more southerly route than on his first journey, that was to put him on the Niger at Bamako (Fig. 11). The air was hot, the rains were approaching and it was not the best time of year to undertake this trek.



Fig. 11. Map of Park's route on his Second Voyage, 1805-1806

On the first day out from Kayee, Park unloaded his asses under a large ‘banteng’ [*Ceiba pentandra* (L.) Gaertn., Malvaceae, commonly known as kapok or the silk cotton tree] just outside Lamain [3: p. 6]. Similarly, at the end of the second day the asses were again unloaded under a ‘tabba’ tree [*Sterculia setigera* Del., Malvaceae, a very common tree that prefers drier and coarser soils and often planted in villages for shade] [3: p. 9].

Kapok grows throughout much of Africa, as individual trees in villages, in avenues to provide shade along roads or in commercial plantations. Historically the main product has been fiber, the floss being derived from the inner fruit wall (Fig. 12). Kapok is used for stuffing cushions, pillows and mattresses and for insulation, absorbent material and tinder. Traditional uses declined in the mid twentieth century as synthetics appeared and little fiber is now harvested even in small villages. Timber is an important product for plywood, veneers and paper. New uses include bioethanol production [15]. Modern studies support the use of various plant parts in the traditional pharmacopoeia [16]. *Sterculia* has many veterinary and human medicinal uses [17]. It also produces a gum that is an article of commerce [18].



Fig. 12. Dry seed pod and floss of *Ceiba pentandra* (Basse, Gambia-Senegal border region, 28 August 2014)

Detailed descriptions of indigo dye preparation and its application to cloth are provided by Park (the Manding are particularly noted for their dyes and dyeing skills). He states ‘at Jindey they dye

very fine blues with the indigo leaves’. He details preparation of a lye from wood ash – chamber lye (urine) was sometimes added – that is mixed with the extracted indigo to produce the dye. The preferred woody species to produce ash was the ‘nitta’ tree and specifically *Mimosa nitta* and probably *M. pulverulenta* [3 p. 10-11]: *M. nitta* is a name that was never published and *M. pulverulenta* is found only in the Caribbean region. Repeated dipping of the cloth in the dye until the coveted indigo color is achieved is described as is the subsequent hammering of the cloth with a heavy wooden hammer to give the product a sheen – an extant practice (Fig. 13). Lye from wood ash is also used with boiled groundnuts to make soap [1: p. 332]. Dried powdered indigo leaves in lumps slightly larger than a fist sold for 4000 cowries – a prime male slave was worth 40,000 (10%), a female slave 80,000-100,000 (5 to 4%), a horse up to 400,000 (1%) and a donkey 17,000 cowries (23%) [3; p. 162].



Fig. 13. The final act in indigo cloth preparation – beating with heavy wooden hammers to impart a sheen (Banjul, The Gambia, 1 August 2014)

Park’s ‘nitta’ was eventually to become *Parkia biglobosa* (Jacq.) R. Br. ex G. Don known in English as the locust bean: the current Bambara name is nère sun whereas in Fulani it is niri. According to Park:

The pods are long and narrow, and contain a few black seeds, enveloped in the fine mealy powder before mentioned; the meal itself is of a bright yellow colour, resembling the flour of sulphur, and has a sweet mucilaginous taste. When eaten by itself it

is clammy, but when mixed with milk or water it constitutes a very pleasant and nourishing article of diet [3, p. 12].

The description and the use as food hold today. The seeds are little traded internationally but are an important item of commerce in West Africa, especially when fermented. Known as 'sumbala' in Manding and 'nététou' in Wolof they add protein to traditional food and are sold mainly by women in local markets (Fig. 14).



Fig. 14. Seed pods of *Parkia biglobosa* showing sulphur yellow mealy powder as described by Park (street vendor at Tambacounda, Senegal, 18 August 2014); fermented seeds for 'nététou'; 'nététou' paste ready for cooking (house compound, Tanji, The Gambia, 2 September 2014)

On 15 May the caravan rested and sheltered from the heat under a large tree called 'Telee Corra' on the banks of the Gambia. Park states this is the same 'nitta' under which he had stopped on the return of his previous journey [1: p. 354,3: p. 20].

Traveling southeastwards there are notes of the presence of 'cibi' trees and bushes between Bray and Nillingding. On 28 May he saw, for the first time on this journey and three miles east of Sibikillin at what he says is 10°59' W longitude and 13° 32' N, his first shea trees, some of which were loaded with fruit [3: p. 39]. Some days later, on 4 June, Park remarks on a grove of large 'sitta' trees near Baniserile and on this day he also received a present of some kola nuts [3 p. 48].

In a short 10-day period at the end of June 1805 Park makes reference to four trees of

considerable economic value. 'cibi' is *Elaeis guineensis* Jacq., Arecaceae, the African Oil Palm which is native to west and southwest Africa but at the northern limit of its natural distribution in The Gambia. Edible Palm Oil is extracted from the fruit pulp (Fig. 15) whereas Palm Kernel Oil is extracted from the nut and used in foods and for soap manufacture. The tree is a source of palm wine (as is the Raffia Palm). Various parts of the plant are said to cure a variety of ills [19]. The 'sitta' named by Park is *Adansonia digitata* L., Malvaceae, universally known in English as Baobab. It is widespread in drier areas over much of subSaharan Africa [20], extremely common in West Africa and has multiple uses in the local economy [21]. It often occurs as groves, as noted by Park, and as such usually denotes a former village site. The bark is stripped for cordage, branches are severely lopped to encourage leaf production, the leaves then being used fresh or dried as a sauce ingredient to accompany the staple porridge, the soft dry fruit ('monkey bread') is edible or is soaked to make a refreshing drink and the pulp, very high in Vitamin C, is a basis for cream of tartar (Fig. 16).

Park remarks on the ashes of 'kino' tree bark being used for smelting iron [3:p. 49]. This is followed a few days later by reference to use of the seeds 'a sort of bean the fruit of a large tree' of the tree 'telee kissi' and the smaller 'jabee kissi' plus tamarind stones as a measure of the weight of gold [3: p. 58].

Bamako was reached on 19 August, 106 days out of Pisanian: in these three and a half months, 28 of 34 soldiers and 3 of 4 carpenters were already dead. Park continued on his way, his last botanic reference when he had still not reached Segou being to mahogany as the best wood for canoes, with almost all in Bambara being made of this species [3: p. 146].

'kino' is *Pterocarpus erinaceus* Poir., Fabaceae. Strictly, 'kino' is now a gum used in tanning but most often applied to *Eucalyptus* gums. The tree, and its relative *P. lucens*, has numerous uses in traditional medicine, as livestock feed and as fuelwood (Fig. 17) [22]. The mahogany referred to is *Khaya senegalensis* (Desr.) A.Juss., Meliaceae, endemic to West and Central Africa and heavily exploited for its hard red timber. It is still the species of choice for dug-out canoes along the Gambia, Senegal and Niger Rivers (Fig. 18). Multiple other uses including the traditional pharmacopoeia and for livestock

feed (it makes a poor firewood) are raising concerns about its future [23].



Fig. 15. Ripe oil palm fruit and market woman measuring palm oil for sale (Tanji, The Gambia 1 September 2014)



Fig. 16. Baobab trees stripped of bark for rope (west of Segou, Mali, 30 June 1985), baobab leaf meal and dried powdered pulp (Sansanding, Mali, 4 April 1979), baobab seeds ('monkey bread) (Serrekunda market, The Gambia, 5 September 2014) and baobab juice (Kairaba Hotel, Banjul, The Gambia, 20 July 2014)

Park's last communication to the outside world was on 19 November 1805 from Sansanding. He wrote to his wife and Sir Joseph Banks, informing the former of her brother's death but assuring her that he himself was in good health. These letters were carried to The Gambia by his servant Isaaco. There being no further news of Park but rumours of his death having reached the coast, the Governor of Senegal sent Isaaco to search for him: he departed on 7 January 1810 but did not return until almost two years later. Isaaco's contributions to West African Botany are meager. On one occasion he remarked on a tree grown on top of another the

wood of which was employed for gunpowder near Toucha, Wattera and Tagoubou [3: p. 196]. Isaaco was later at a village near Bonabougou that was surrounded by Palm Trees of which he did not know the name but were called 'ronn' by the locals [*Borassus aethiopum* Mart., Arecaceae, best known in English as the African Fan Palm]. He also saw a fine 'doualli' tree on 26 August 1810, the first since he had left Senegal. The tree was green and beautiful and in blossom but not bearing fruit. He saw three more of the same tree at Counnow and finally another large unnamed tree that was inhabited by many large bats.



Fig. 17. *Pterocarpus lucens* as domestic fuel (Niono near Segou, Mali, 2 January 1979)

4. DISCUSSION

In the preface to Volume 1 Park says his book is a 'plain unvarnished tale, without pretensions of any kind, except that it claims to enlarge, in some degree, the circle of African geography.' [1: p. vii]. The objective of his second voyage was 'the extension of British commerce and the enlargement of our geographical knowledge.'

It is not surprising, therefore, and in spite of his training, that Park's botanical coverage in both volumes is sparse and incomplete. Most plants are mentioned in passing. Other than indigo, the use of some plants is touched upon but generally superficially nature. Knowledge of the botany and uses of plants in the predominating agricultural systems of West Africa at the end of the 18th century was fragmentary. Park largely missed the opportunity to expand on this knowledge and failed to enlarge on species that were very important to the local economy. He missed, for

example, *Digitaria exilis* (Kippist) Stapf, Poaceae, sometimes known in English as 'hungry rice', in Manding and Bambara as 'fonio' and in Wolof as 'findi'. This very small-grained cereal – it resembles a weed rather than a cultivated plant which may be partly why it was not noted by Park – is of major value as a drought crop and is commonly grown in eastern Gambia, the surrounding areas of Senegal and east and central Mali [24,25]. In September 2014 'findi' sold at 2.4 times the price of the same volume of millet *Pennisetum glaucum* on the Banjul market and at 3.0 times the price of rice (Fig. 19). Another example is the Baobab *Adansonia digitata* which is one of the most conspicuous visual features of the landscape and of major economic importance throughout Park's area.



Fig. 18. Dug-out canoe of African Mahogany *Khaya senegalensis* (Bansang, downstream of Park's departure point at Pisanja on the River Gambia, 24 July 2014)

Other species of value to people, livestock, agroforestry, sustainable production and non-timber forest products are hardly recognized or not mentioned at all. These include *Balanites aegyptiaca* (L.) Del., Zygophyllaceae, the Desert Date [26] or 'sump' in Senegal and The Gambia, and *Detarium senegalense* J. F. Gmel., Caesalpiniaceae, known as 'ditax' or 'dank' in

Senegal where, as in The Gambia, it is widespread and common [27,28]. The Apple-ring Acacia, *Acacia albida* Del. (now generally *Faidherbia albida* (Del.) A. Chev.) is another major agroforestry species of inestimable value as medicine, food for people and feed for animals and has the peculiarity of losing its leaves during the rains rather than during the dry season so does not inhibit the growth of crops (Fig. 20) [29,30]. Figs (*Ficus* spp.) are widespread and conspicuous throughout West Africa but receive no mention at all.



Fig. 19. 'Fonio', millet (the kouskous of Park) and rice on sale in a local market (Serrekunda, The Gambia, 5 September 2014)



Fig. 20. Maize under *Acacia albida* in an agroforestry system (Wadi 'Azum, Western Darfur, Sudan, 15 August 1977)

5. CONCLUSION

Park travelled through parts of West Africa that are now the independent countries of The Gambia, Senegal, Mali, Niger and Nigeria. His brief was primarily geographical discovery but

because of the inquisitive nature of the man he also commented on many other aspects of the life around him. One such aspect was botany. He made many new biogeographical discoveries but did not really do justice to the possibilities afforded him.

Modern generic and specific names testify, however, to Park's contribution to the economic botany of West Africa. Thus, he is remembered notably for the locust bean tree *Parkia biglobosa*. He should be celebrated by the shea butter tree *Butyrospermum parkii* but the march of scientific progress has removed this from him through taxonomic revisions to *Butyrospermum paradoxum* and then to *Vitellaria paradoxa*.

The passage of more than 200 years from Park's time has seen many changes in economic and social development and the ecological environment. Now, as then, however, plants in West Africa continue to contribute to food and nutrition, to income and to people's livelihoods.

ACKNOWLEDGEMENTS

Dr Ansumana Jarju, Deputy Director, The Gambia National Agricultural Research Institute, helped identify some plants where Park used only vernacular names. I obtained corroboration of the names from my driver Sheriffu Janeh when I asked him to indicate the native names of the trees I showed him and also identified some trees on the basis of native names I gave him.

All original photographs indicated in the text by dates in brackets were taken by the author (who has more than 40 years experience working in Park's area) to illustrate the contemporary 21st century use of plants identified and described by Park during his voyages. Individual persons who appear in the photographs all gave their consent to being photographed and to their eventual use in a publication.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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