

HENRY MORTON STANLEY – EXPLORATION AND MAPPING OF THE CONGO RIVER (1874-1877) - solving the last great mystery of the African continent-

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Abstract

Henry Morton Stanley (1841-1904), one of the world's most famous explorers, had a very important role in the mapping of the African continent. One of his many achievements was to solve the last great mystery of African exploration by tracing the course of the Congo River to the sea. During the so called Anglo-American expedition (1874-1877), he passed through central Africa, from the Indian to the Atlantic Oceans. He reached the sea in August 1877, after an epic journey that he later described in his book *Through the Dark Continent* (1878). He was the first European who navigated along the river's length and reported that the Lualaba was not a source of the Nile as had been suggested. As a former soldier in the American military service, Stanley was not only an explorer, but also an excellent cartographer. During his exploration of the Congo River, he made a certain number of maps, which were the first reliable maps of that part of the African continent. Stanley's maps significantly improved cartographical knowledge of central Africa and corrected many mistakes recorded on older maps. Based on his field work and his manuscript maps, the first accurate maps of the Congo River were compiled and printed for the very first time.

Introduction

The Congo River with its length of course of about 4,700 km is one of the longest rivers in the world. It crosses the Equator twice, flowing through the second greatest rainforest in the world. It wells up south from the Lake Tanganyika as the river Chambeshi. After the confluence with Lake Bangweulu, under the name of Luapula it continues its flow to Lake Mweru and further to north where it joins the river Lualaba, which is the other stream of the Congo. From there to Kisangani (previously Stanleyville), Lualaba forms the upper course of the Congo River. After it crosses the Equator, the Congo turns to the west, forming a large arch. A part of the Congo, from Kisangani to Lake Malebo (Malebo Pool, which used to be Stanley Pool), east from Kinshasa (formerly Leopoldville) forms the middle flow of the Congo. A part of the course from the Malebo to the confluence with the Atlantic at Banana Point, forms the Lower Congo. On the bank of the Lower Congo live the Bakongo people, descends of the ancient African kingdom by which this river was named.

The Congo River was one of the last researched and mapped great African rivers. The most important role in mapping of the Congo River was played by Henry Morton Stanley (1841-1904), the American journalist who dedicated the whole of his life to the river. He was on the Congo River four times: first time (1871-1874) when he found the river together with Dr. David Livingstone, second time during his Anglo-American expedition (1874-1877), third time in the service of the Belgian King Leopold and the fourth time when he saved Emin Pasha (1888-1890). During his Anglo-American expedition, in which he travelled the whole of the course of the river; he made the first correct map of it, solving some of the last mystery of the African continent.

Congo as an unsolvable enigma

At the beginning of 19th century the Congo River was still almost completely unknown to European explorers. The history of discovery and mapping of the Congo River was inseparably related to its specific geographical characteristic. Difficult natural conditions of the region where the river flows and its deadly, impassable cataracts obstructed even those of few explorers' attempts to penetrate its interior.

The greatest problem in exploring and mapping of the Congo was certainly the fact that the largest part of the river's course is found in the area of impassable rainforests with their extremely moist and unhealthy climates. The

second problem was caused by numerous cataracts which obstructed travel along the river to its furthest borders. In fact, the numerous cataracts of the Congo obstructed explorers in penetrating deeper into the river's course, although the Congo River is the only great African river with an open mouth which allows easy entry from the direction of the Atlantic into its interior. Stanley Falls (today Boyoma Falls) on Lualaba (near Ubundu, formerly Ponthierville) forms a chain of seven cataracts which obstructed explorers in following the course of the Congo River in the direction from its source to its mouth. On the other hand, upstream from Matadi Port, Livingston Falls, which forms a chain of 32 cataracts, obstructed explorer's penetration to interior of the river in the direction from its mouth to its source.

The unusual course of the Congo, additionally confused explores. None of the world's other great rivers cross the Equator twice; or so drastically change their directional flow. For ancient explorers it was difficult to believe in the connection between the Lualaba that flows straight to north and lower course of the river which joins the Atlantic Ocean from a northeast direction. For a long time it was believed that there existed two completely different rivers. Therefore even experienced explorers such as David Livingstone took the Lualaba to be a stream of the Nile, while he believed that the lower course of the Congo was the mouth of the Niger.

Aside of the geographical obstacles, the exploring and mapping of the Congo River was also obstructed by some social factors. Numerous tribes, amongst which many never met a white man, presented constant dangers to the explorers. Historical context was also not favourable to the explorers of the Congo. The whole of central Africa was for centuries one of the main routes of notorious slave traders who additionally instilled fear in local tribes concerning any contact with the outside world. Even slave traders would accept explorers with hostility, paranoid of anyone who could take over their business.

In the end, the progress of the exploration of the Congo River was influenced by some sociological moments. The Congo is situated in the heart of Africa, faraway from Europe to which it was completely unrelated. This can not be said for the River Nile to which has been related to Europe since ancient times. The Nile, as a symbol of the cradle of civilisation, presented a symbol which was worthy to fight for. The Niger was also a river which inspired the imagination of many Europeans. Although no European had seen it until the beginning of the 19th century, the Niger was a part of European mythology since early modern times. In fact, the Niger was the river which flowed through Timbuktu, the legendary golden city which was passed by many caravans which crossed Sahara. Hence, as the Nile, the Niger was a river worthy of discovery. In contrary, the Congo did not represent the same things as the River Nile, neither the Niger with its tempting treasures. Even when its existence was presumed, explorers were not overly enthusiastic for its exploration. Therefore the Congo was discovered accidentally, during the pursuit for the gold of the Niger and by the will to discover the secret source of the Nile.

The level of knowledge of the Congo River on the eve of the beginning of Stanley's expedition (1874-1877)

The first meeting of the Europeans with the Congo River happened in 1482 when the Portuguese sailor Diogo Cão discovered the mouth of the river. Although this discovery dramatically changed the destiny of the Congo and central Africa (the slave trade started), the Congo River remained completely unexplored for the next two hundred years. Even the 60 kilometres of the lower course of the river which was navigated from 1482, were only superficially mapped. Although Portuguese soldiers and missionaries had already penetrated all the way to Malebo Pool within the first ten years of the Congo's discovery, information about this expansion of the river was not noted on maps until the 19th century. There was almost nothing known about the middle and upper courses of the river. The generally accepted presumption was that the Congo welled-up from a great lake in the heart of central Africa from where the Nile also surfaced which was inundated with the water of the Mountains of the Moon (*Lunae Montes*).¹ Problems which met the first organised expedition which was determined to explore the Congo River led by the English officer James Kingdon Tuckey in 1816, additionally discouraged potential explorers.²

The controversial French explorer Jean Baptiste Douville (1794-1833) also had a certain influence on the cartographic presentation of the Congo River. Although later it was proved that his description of central Africa was not authentic but just taken from unpublished Portuguese manuscripts. Dates from the map which he added to his disputed

¹ This presumption arose in the 15th century. First time being written in 'L'Insularum Illustratum Henrici Martelli Germani' in 1489 (*Forbath, 1982; 150*).

² Tuckey's expedition succeeded with great problems only to break through from the river's mouth to the Inge cataract upstream from Matadi. With this expedition Tuckey did not arrive close to the solution of the problem of the identification of the Niger and the Congo stream. His expedition, which was very well equipped, explored and mapped only an insignificant part of the river.

work, were often used as a template for the representation of the Congo River in atlas editions from the middle of the 19th century (i.e. compare Ravenstein's map of Africa - südliches Blatt, published Meyer's Hand-Atlas from 1869.)³.

Explorations of the source of the River Nile in the middle of the 19th century brought the first news related to the upper course of the Congo River. After Burton and Speke found Lake Tanganyika searching for the source of the Nile in 1858, (Burton, contrary to Speke who correctly established that the source of the Nile is in Lake Victoria, was sure that just the Tanganyika was its source), explorations were unintentionally directed to the well of the Congo. Searching for the Nile's source in 1867 on Lake Tanganyika David Livingstone also came, he also believed that this must had been the source of the Nile. Exploring the area south of the Tanganyika, Livingstone discovered the source of the Congo, the River Chambeshi, the Mweru (1867) and Bangweulu (1868) lakes and the river Lualaba (1871) (Huxley, 1977; 272-272). In this way Livingstone was the first person who mapped the source fork of the Congo from the Chambeshi to the Lualaba near to Nyangwe.

In 1871 Livingstone met Henry Morton Stanley after which they continued their exploration of the Tanganyika together. After they established that the river Rusizi flows into, not out of the lake and therefore it could not be the source branch of the Nile as believed by Barton, Livingstone was even more convinced that the Lualaba was the well of the Nile. Thus Livingstone put the course on his map of the Lualaba as it turned towards the northeast instead of towards the northwest, believing that the Lualaba, after the Nyangwe turned towards Lake Albert from where it flowed further as the River Nile.

In 1873, looking for Livingstone, the English explorer Verney Lovett Cameron also arrived at the Tanganyika. During his exploration work, Cameron was the first to map some of the numerous tributaries of the Lualaba including the Lukunga and completely improve the knowledge about the Lualaba flow from Lake Mweru to the Nyangwe.⁴ He immediately was suspicious of Livingstone's theory about the Lualaba as the well of the Nile. Navigating around the banks of the Tanganyika, Cameron discovered a runlet of the lake – the river Lunkunga, but because of extremely low tide of the river, he was not sure if the Lukunga joined the lake here or was sourcing from it.⁵ He then went across the valley of the Luama towards the Lualaba where he came out at the Nyangwe. When he measured the height of the Lualaba near to the Nyangwe, he was convinced that it could not have any relation with the Nile system because the Lualaba is lower by the Nyangwe than the Nile by Gondokor. Cameron didn't succeed in buying boats to progress on his travels which would have helped him to prove that the Lualaba was a tributary of the Congo instead of the Nile. In this way his theories, although correct, remained without proof. This duty was carried out by Henry Morton Stanley who came to the Tanganyika again a few months after Cameron.

So, before Stanley's Anglo-American expedition (1874-1877), the Congo River, with exception of its well, which is the upper course of the Lualaba and the mouth of the river in the Atlantic, were still almost completely unknown to European explorers and cartographers.

Henry Morton Stanley and the Anglo-American expedition (1874-1877)

Henry Morton Stanley, after Livingstone's death, went back to England. Some important discoveries still remained without proof, although some important steps forward in the knowledge of central Africa were made. Certainly, the main questions were still related to the source of the Nile. It was necessary to navigate Victoria Lake and investigate Speke's theory about the source of the Nile. There was also the question of the Livingstone's Lualaba. Was it the source of the Nile or the Congo River? To sort out all of these dilemmas, Stanley started his travels to central Africa again on 15th August 1874. Travel expenses were very high. This time Stanley's travel was financed by two magazines, the New Yorker *Herald* for which Stanley worked as a correspondent and the British *Daily Telegraph*, whose vice-editor, Edwin Arnold, was a member of the Royal Geographic Society. This was the reason the expedition was named the Anglo-American Expedition. More than 1,200 volunteers' applications who wanted join to Stanley's team arrived at the editorial addresses of the *Telegraph* and *Herald* after the announcement of the expedition. However, he chose three ordinary young Englishmen, brothers Edward and Frances Pocock, fishermen from Kent and Frederick Barker, the liftboy from the «Langham» hotel where he stayed temporarily.

In Zanzibar, in November 1874, after arriving by ship, he hired porters and began his travel through the hinterland of Africa. He passed a 1,150 kilometres distance from the shore of the Indian Ocean near Bagamoyo to Victoria Lake in a record time of only 103 days. When he finished navigating and mapping Victoria Lake proving

³ His explorations together with the map were published in his book «Voyage au Congo et dans l'Afrique équinoxiale» (4 vols., with a map, Paris, 1832).

⁴ Cameron published the results of his explorations in his book «Across Africa», London, Dalby, Isbister & Co, 1877

⁵ In his diary he noticed that 96 rivers converged and one, the Lukuga, flows out from the lake.

Speke's theory of there being only one lake from which wells-up the Nile (Ripon Falls), in July 1876 he started the exploration of Lake Tanganyika. Passing around and mapping the lake, he proved that the lake has not a runlet which could be the well of the Nile.⁶ Now he could dedicate himself to his third duty; the exploration of the Lualaba River and follow its flow. On 25th August 1876 he started from Ujuji (*Huxley, 1977; 289*). He entered from Lake Tanganyika towards the Lualaba along the river Luama, the tributary of the Lualaba, from where he quickly arrived at Nyangwe, the station on the Lualaba where Livingstone and Cameron had also stopped before him. From this point Stanley followed the course of the Lualaba to the Congo River and its mouth into sea. On 9th August 1877, after 999 days of travel, Stanley arrived at the mouth of the river. He became the first white man to pass the whole course of the Congo River. He indisputably proved that the Lualaba was not the source of the Nile, just the Congo. The last great mystery of the African continent was solved.

Stanley's cartographic representations of the Congo River

All through his expedition, Stanley mapped the territory which they were passing through⁷. He used his own diary to draw pencil sketches. During his travels, he filled up six volumes with his pencil sketches and notes, which contained all the data about the expedition's motion, the problems which they were faced with and description of the terrain and placement of camps where they would spend night. In descriptions of the terrain, he limited himself only to this what he was able to see from the river. Stanley passed along the Congo River navigating with the *Lady Alice* boat and canoes, but where it was not possible to navigate (areas of cataracts), he pushed forward walking alongside the river bank, together with his boat's crew carrying canoes on their backs. As the vegetation alongside the river was quite dense and high, apart from the river's course and the bank's configuration, Stanley was not able to see much more.

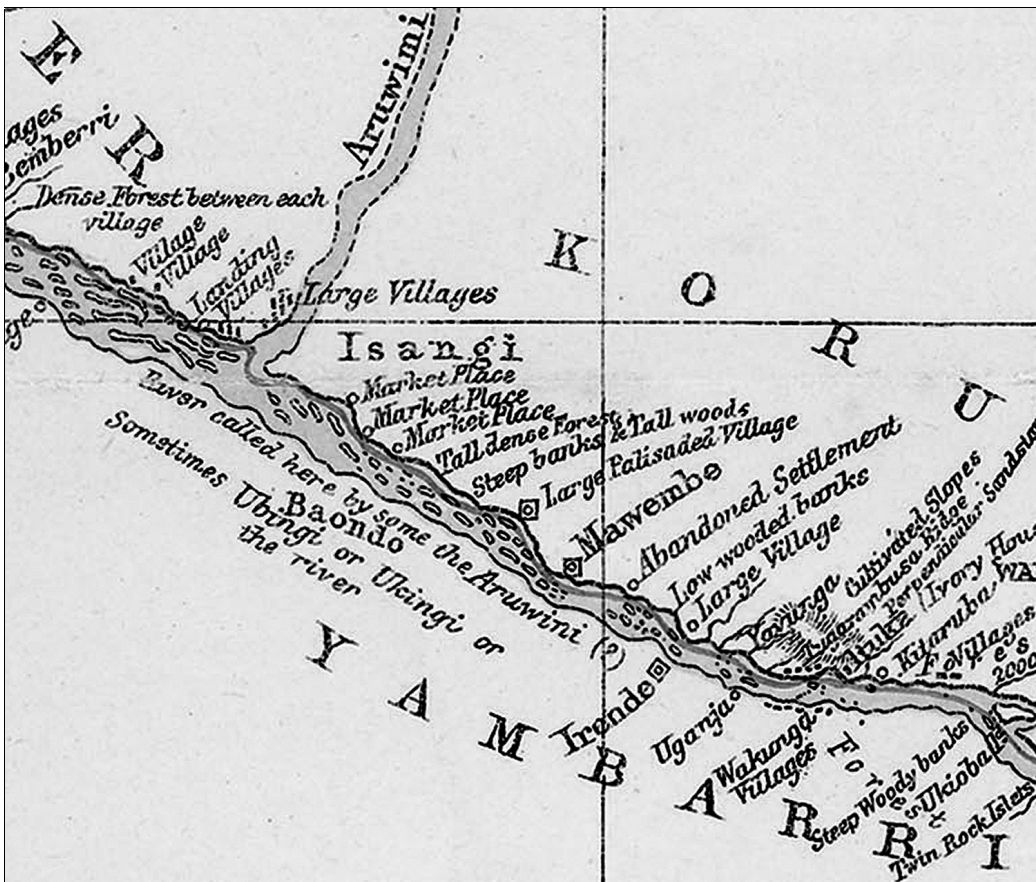


Figure 1. Stanley's map of Congo, detail of the river around the confluence of the Aruwimi

⁶ During this occasion he even explored the mouth of the Lukunga. As Cameron, Stanley was not sure whether this was the mouth or runlet of the river, but as he saw that the level of the lake rise up periodically, he believed that it must had been the mouth of the tributary of the Lualaba River.

⁷ His original surveying notebooks and maps that he made during his exploration of the Congo River are kept in the Royal Museum of Central Africa in Belgium as a part of the Henry Morton Stanley archives.

These difficult field work conditions were the reason that Stanley's sketches show only the river's course and its tributaries and numerous river islands. He took special care in his representation of the falls and other obstacles on the river and he noted their placement and height (in feet) and their names. He made numerous notes about the riverbank's configuration on the top of his sketches (i.e. *low banks*, *step banks*, *wooded banks*). Although he did not map vegetation, Stanley would often put notes about the forest cover or how easy it was to walk through. Any description of the relief was very rare. Apart from sketches drawn as ground plans, for some areas he also drew views from a side perspective (mainly related to waterfalls and cataracts).

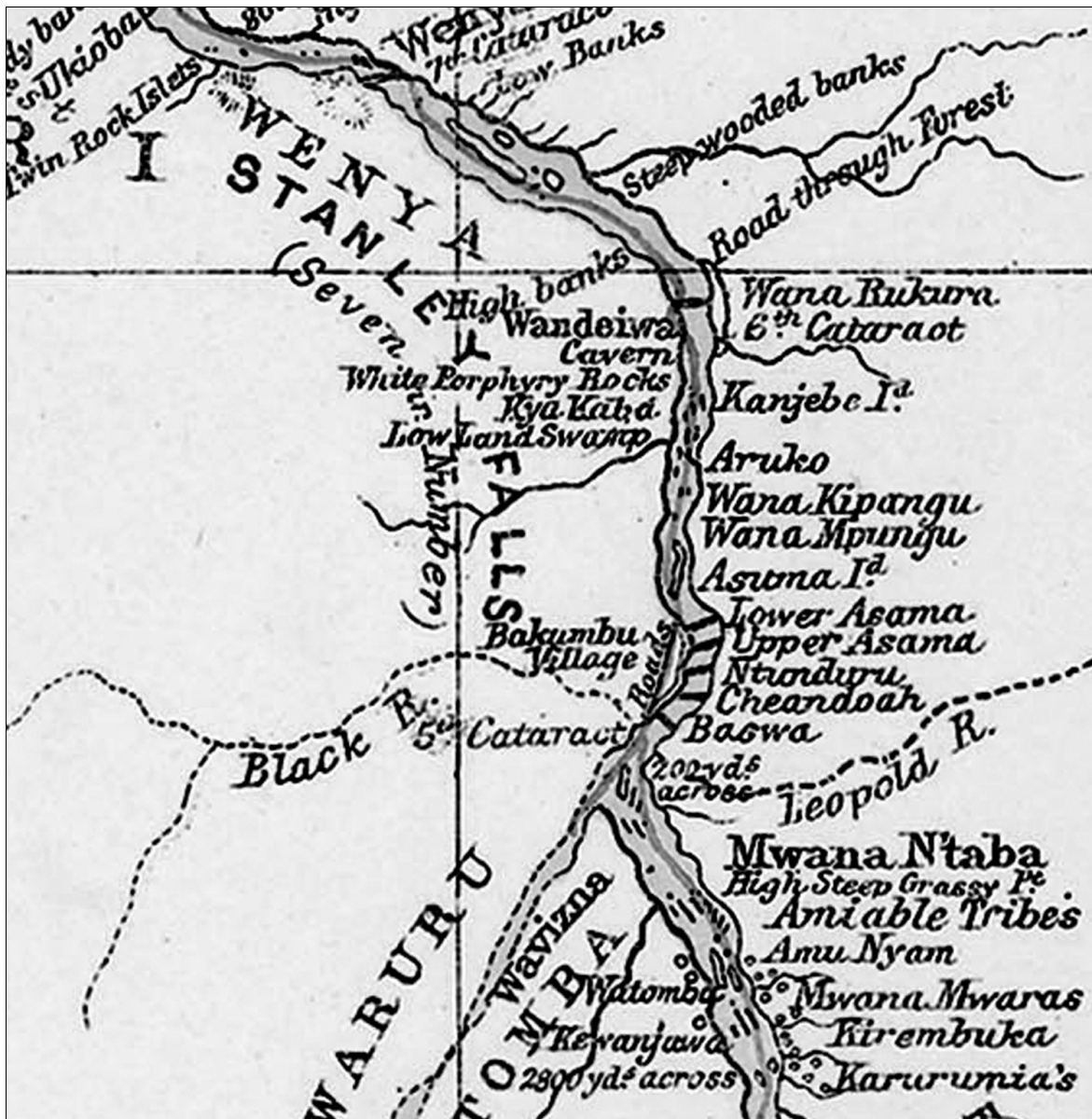


Figure 2. Detail of the Stanley's printed map of Congo presenting the Stanley Falls (today Boyoma Falls)

Stanley showed special consideration to the mapping of the numerous settlements along the river's course. In this way he noted all the markets and settlements including those which were abandoned. These notes of numerous abandoned settlements mention the horrible effects of the slave trade. He very often noted even the physiognomic characteristics of settlements (i.e. *palisade villages*). For some settlements he would put only a note *village* or *fisherman's camp*, whilst for a large number of them he gave their original names. Therefore Stanley's maps also represent an exceptionally valuable historical document which witnesses the original local toponyms before numerous original names disappeared or were simply replaced with colonial names. Apart from the settlements, Stanley also noted the names of local tribes, whether were they peaceful or warriors (i.e. *ferocious tribe*, *cannibal tribe*), how they were armed (i.e. *tribe armed with muskets*) etc.

Especially valuable are Stanley's notes relating to hydrographical names (potamonyms). Here he also presented their local names. He often noted more names for the same object or river. In this way it is especially interesting to follow the different names for the Congo River. Almost every tribe had its own name for the river.

Although it is to Stanley's merit to note these numerous toponyms which would be changed or disappeared by the influence of colonisation, he also was one of the explorers who started in changing their original names. Therefore he named the Congo River the Livingstone River in honour of David Livingstone and the system of the cataracts in the lower course of the Congo he named Livingstone Falls. One of the northern tributaries of the Congo near to the Inga Falls he named Edwin Arnold River after the vice-editor of the *Daily Telegraph* who provided financing for the Stanley's expedition. Belgium King Leopold also received his own river (Leopold River, today the Lilo River?), James Gordon Bennett, the editor of the *Herald* (*the Gordon Bennett River*, today the River Djoué), and certain Victor Lawson (the Lawson River, today the River Néfini). Stanley's faithful companion Frank Pocock received Pocock's Pool, Stanley's young love Alice Pike, after who the boat was named, even received her own waterfalls (the Lady Alice Rapids), while for himself personally he noted Stanley Pool (today's Malebo Pool) and Stanley Falls (today's Boyoma). None of these toponyms exist today.

The described sketches served as material to design the map of the whole of the course of the Congo River. A printed version of this map was published as an addition to his book '*Through the Dark Continent*'⁸. The map was created in two pages sized 70x85 cm and was made to the scale of about 3,000,000⁹. The map contains a coordinated grid, starting at the Greenwich Meridian. Besides this map, there were other smaller maps added to the book: overview map of the course of the Congo River from Boma to Stanley Pool, a map of the Stanley Falls and a detailed map of Lukunga Creek.

Comparing Stanley sketches with the printed map added to his book, we can conclude that the published maps are completely based on Stanley's sketches. The course of the river, the same toponyms as the numerous notes which we can find on his sketches, we can also find on the published version of the map. Hence, they are authentic according to Stanley's observations in the field. Certainly, this is valuable for the territories around the course of the Congo River and the terrain close to it. Areas south and north of the river and which are presented in the published version of the map, were made by compiling maps of some other cartographers.

Measuring methods

During his journeys Stanley accomplished his cartographic and measuring capacity. Upon his first African expedition (1871-1874) he used a watch and compass for measuring distances. He used the so-called *dead reckoning* method. This is travelling on a particular compass bearing for a particular number of hours at an estimated average speed. Based on the number of hours of walking the distance could be determined (*Daeren, 2005; 12*).

During his Anglo-American expedition Stanley carried a pedometer, an instrument for measuring distances which gave him more precise measurements of passed distances and a determination of exact positions (*Newman, 2004; 99*). These calculations were quite simple and did not include astronomic observation. At the beginning of his Anglo-American expedition Stanley started to measure longitude and latitude for the first time. He carried out the first measurement of the longitude and latitude on 19th November 1874 on one of the islands near Zanzibar (*Daeren, 2005; 12*).

For the measurement of longitude he used a chronometer (which is set to Greenwich Mean Time). It showed him Greenwich Time whilst he defined the local time by the sun's culmination (midday). Time difference between the local time of his position and the local time in Greenwich calculated to the scale of distance taking every four minutes as one degree.

⁸ The book was published many times after the first edition which was published by Sampson, Low, Marston, Searle & Rivington in London, 1878. In the same year there was a German version of the book published in Leipzig.

⁹ The titles of the English version of the maps are: «Map showing the eastern half of equatorial Africa and explorations by land and water of Henry Morton Stanley 1874-77» and «Map showing the western half of equatorial Africa and explorations by land and water of Henry Morton Stanley 1874-1877». The title of the German edition was «Westliche Hälfte von Äquatorial-Afrika und die for Forschungsreisen zu Land und zu Wasser von Henry M. Stanley in den Jahren 1874-77» and «Östliche Hälfte von Äquatorial-Afrika und die for Forschungsreisen zu Land und zu Wasser von Henry M. Stanley in den Jahren 1874-77». The first edition of the maps was prepared by Sampson, Low, Marston, Searle & Rivington' and its German version by the mentioned London publisher together with F. A. Brockhaus. The German edition of the maps was completely identical to the English and the only difference was the title being translated into German.

He measured latitude by sextant, an instrument which measures the angle between the horizon and a celestial body (the Moon, the Sun, stars), with special tables which help to calculate latitude.

For the definition of altitude he used three methods. The oldest amongst them was the boiling point of water method. Namely, approximately for every 300 metres of ascension, the boiling point drops by 1° C (*Huxley 1977; 283*). Beside this method of *boiling point of water* for definition of the high Stanley used also aneroid barometer by which he measured air pressure and based on the differences of the pressure he measured high differences. For definition of the high of distant objects he used theodolite. He used yards for measuring the length and feet for heights.

In this way Stanley combined traditional and contemporaneous (instrumental) methods of measurement on base of which he was able to design quite precise maps.

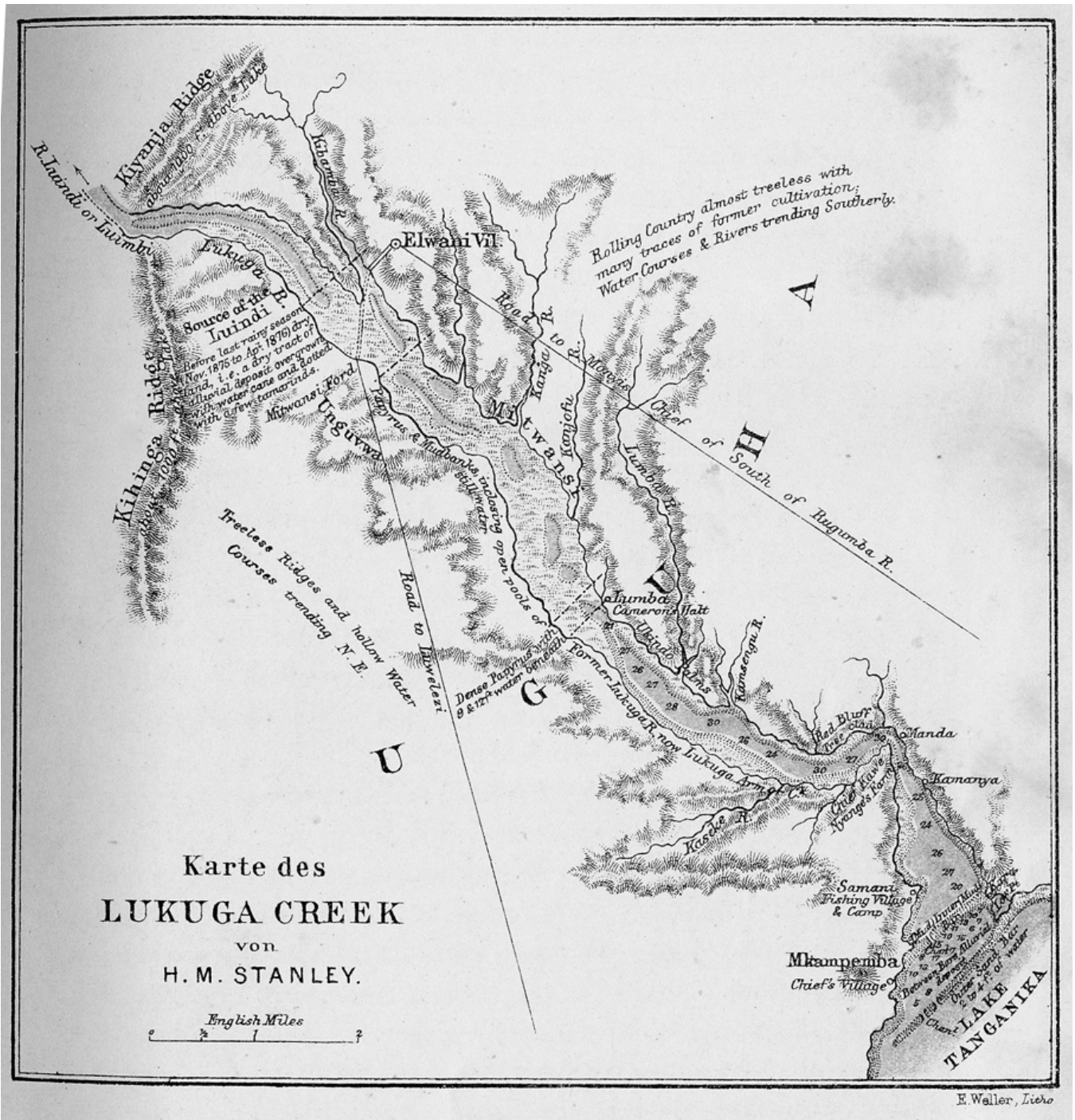


Figure 3. Stanley's printed map of the Lukunga Creek (German version)

Stanley's contribution to geographical and cartographical knowledge of the Congo River

Crossing the flow of the Congo River from Niangwe on the Lualaba River to the mouth of the Congo River, Stanley was the first explorer who had an opportunity to map this African river in its almost entire stretch. How successful he was and how great his addition to the cartographical knowledge of the Congo River was, we can see by comparing his maps with the maps of his predecessors and contemporaneous maps of the same area.

On Stanley's maps we can see for the first time the whole course of the Congo River with its characteristic bend towards northwest. The Lualaba was drawn for the first time as one of the sources of the Congo River and that corrected Livingstone's mistake. Also marked were the majority of the tributaries in the area of convergence to the Congo River as well as the numerous river islands of the Congo River. For the first time the numerous cataracts and enlargement of the river in the area of the Malebo Pool were mapped. Stanley gave special attention to the Lukunga River for which he made a separate map. For the purposes of exploring the Lukunga and resolution of the dilemma does it join to or come from the Tanganyika, he measured the depth of the Lukunga flow. Beside the Congo River, Stanley was the first one who also marked settlements alongside the Congo River giving us the picture of inhabitation of a large part of central Africa.

How much Stanley's measurement of the Congo River was precise, we can tell by comparing his map with today's map of the same area. If we put a modern map over Stanley's map which would have the same scale, we would be able to see that there are some variances which are not the same along the river course. The lower part of the river near the river's mouth would be the most precise. There the position of the river and its geographical latitude and longitude were defined quite precisely (Banana settlement on the mouth of the river is placed at about 6° of the southern latitude and 12° 45' of western geographical longitude). Near to Inga Falls variations are about 0,5° and they rise to 1,5° of longitude near Malebo Pool. Therefore in the whole area of the course between Kinshasa and Mbandaka, its position was moved too far towards the west. This mistake is not only a result of the imprecise measuring of longitude. It is obviously that he made some mistakes in orientation of the river course (the river course in this part has the form of a concaved line, whilst Stanley drew the same part of the river as convex). The whole of the north part of the course he mapped quite precisely. A significant variation can be found in his mapping of the river, which he had not visited personally, which is the upper course of the Lualaba. This river, from which the Mweru Lake flows almost straight northwards, Stanley drew with a large meander in direction towards the east. A certain variation can also be seen by Stanley's placing of the Lake Tanganyika which he moved for about 0,5° of longitude towards the west.

Many of his contemporaries like Schweinfurth or Mackay criticised Stanley's maps and his methods as not being enough scientific enough. Bearing in mind the life threatening conditions in which Stanley worked, this map certainly represents a significant step forward in the cartographic knowledge of the Congo River, putting aside the obvious variations of some measurements. Not only was the whole course of the Congo River for the very first time mapped, but it is also mapped quite precisely mathematically, especially if we take into consideration that Stanley was not educated as a cartographer. Of course, Stanley, who for the first time during this expedition used some measuring instruments and applied astronomic observations, did not measure absolutely precisely every time. However, the extremely large territory, which he was mapping and the number of his measurements, which he made in during only brief pauses along the way, we can say that mistakes he made during his measurements can be understood if not excusable.

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Biography of the author

Mirela Slukan Altić graduated in geography at the University of Zagreb, Faculty of Natural Sciences and Mathematic where she took her MA and PhD in the subject of historical cartography. Since then she is involved with historical geography and historical cartography. The specific area of her scientific work is the historical geography of Southeast Europe with more focus on the history of borders and administrative-territorial organisations, historical cadastres, the development of settlements and the researching of old geographical maps and their interpretation as historical sources.

From 1994 to 2004 she worked as a head of the Cartographic Collection of the Croatian State Archives. At the same time she carried out the duty of Chair of the Institute for Archivistics, Historical Ancillary Science and Filmology established by the Croatian State Archives. Since the 2005 she is a scientific Associate and is employed in the Institute of Social Sciences Ivo Pilar. As head researcher she is leading the scientific project 'Historical Atlas of Croatian Towns' which has received international support.

As an external collaborator of the University of Zagreb, the Faculty of Philosophy, History Department, she teaches about «Cartographic Sources of European and Croatian History». She also teaches postgraduate studies at the Ethnology Department of the Faculty of Philosophy, University of Zagreb, and at the History Department in Pula of the University of Rijeka. To date she has published more scientific and expert works, seven books and participated in more Croatian and international scientific symposiums. In 2004 she was given a science award for her book «Historical Cartography - Cartographic Sources in Historical Sciences».