

## CASE REPORT

# The 'Skull from Bangkok': a skull of a betel quid chewer in the anthropological collection of Rudolf Virchow (Berlin)

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**This report describes the 'Skull from Bangkok', collected by Rudolf Virchow (Berlin, Germany) in the late 19th century. The skull is part of an extensive anthropological collection of skeletons and skulls from all over the world. The skull was probably brought to Berlin during the years 1882–1883. An inscription on the frontal bone gives the name of the skull: 'Skull from Bangkok'. The few remaining teeth of the maxilla show brown black stains because of betel quid chewing. In the collection, there is an extensive number of skulls from South- and Southeast Asia with similar betel stains. Virchow himself was aware of this habit and has described some of the skulls in detail often mentioning the black stains because of betel quid chewing. The Skull from Bangkok is a proof that betel quid chewing was prevalent in Siam of the late 19th century.**

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Betel quid chewing is a habit of great antiquity and has been for many centuries part of the daily life of a large proportion of people of South- and Southeast Asia. A rich variety of social functions was associated with the habit of betel quid chewing (1). The habit had a significant function in communication between individuals, probably in all betel quid chewing societies. The offering of betel nuts (*Areca catechu* L.) and quid ingredients has been a custom at the time of birth, weddings and death (1).

Several studies on betel stains on teeth of archaeological specimens have been published in recent years. Identification of *A. catechu* residues on the dentitions of

bronze age inhabitants of Northern Vietnam has been reported (2). Both by scanning electron microscopy and GC/MS analysis black stains were examined. GC/MS analysis revealed the presence of a compound, which was considered to represent a tannin, which is one of the substances known to occur in the betel quid. Consequently, the authors concluded that the black stain was representative of betel quid chewing at that time. Bioarchaeological research on the Mariana Islands (Micronesia) also showed that betel quid chewing was prevalent in this part of the world in former times (3, 4). Hanson and Butler (4) observed betel stains of the enamel in permanent teeth of approximately 92% of all adult dentitions examined. These stains were found to rarely occur prior to the age of 16 years and after the age of 23 years. In addition, these authors speculated on a probable cariostatic effect of betel quid chewing, which, however, has never been proven to date.

Betel quid chewing was also highly prevalent in Siam, which became Thailand in 1939. The first written account of the habit in Siam dates back to about 700 years. The famous stele of King Rama Khamhaeng (AD 1275–1317) shows an inscription with the following text: 'The people of this country of Sukothai set up areca plantations and betel plantations all over the country' (5). Similar inscriptions were discovered in monasteries of Northern Thailand (Kingdom of Lanna), which date back to the early 15th century (H. Penth, Personal communication). During the 14th and 15th centuries in Sawankhalok (Thailand) maternity figurines made of ceramic were produced, some of which showed the presence of a lump or swelling of the cheek. This was interpreted as a betel quid, which was held between the teeth and the cheek (6). In the 17th and 18th century, a number of travellers gave account of the betel quid chewing habits in Siam. The earliest account was by Monsieur Le Chevalier de Chaumont in 1686 (7). A similar account was given by Simon de la Loubère in his book 'Du Royaume de Siam' (8). Most of these reports focussed on the ugliness of the betel quid chewing habit in that it causes a red spittle, red lips and black teeth. The betel quid chewing habit in Thailand steadily

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decreased from about the mid 20th century. De Young (9) in his studies of village life in Thailand during the early 1950s came to the conclusion that a number of old customs, including the betel quid chewing habit, are showing signs of decline (9). This decline has later on been documented in several other studies (10, 11).

While the betel quid chewing habit in Siam has been described in books and travellers' reports and occasionally on early photographs (12) no physical evidence of the habit of the 19th century is known to date.

Recent studies of the anthropological collection of Rudolf Virchow (1821–1902) in particular of skulls of the South- and Southeast Asian as well as Micronesian regions revealed a number of skulls with black stains of the teeth. Among these, one particular skull was brought from Bangkok, capital of Siam, to be added to the collection in the late 19th century.

The purpose of this report is to shortly describe this skull from Bangkok. What makes this skull particular is the inscription on the frontal bone in German script. The inscriptions read as follows:

4. II. 82 (?). S.M.S. Stosch.

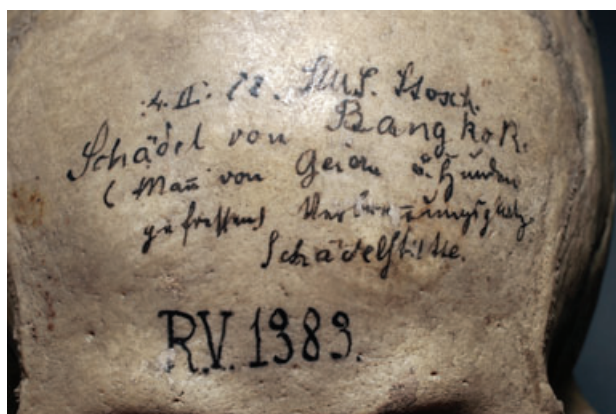
Schädel von Bangkok. (Man von Geiern u. Hunden gefressen).

Verbrennungsplatz.

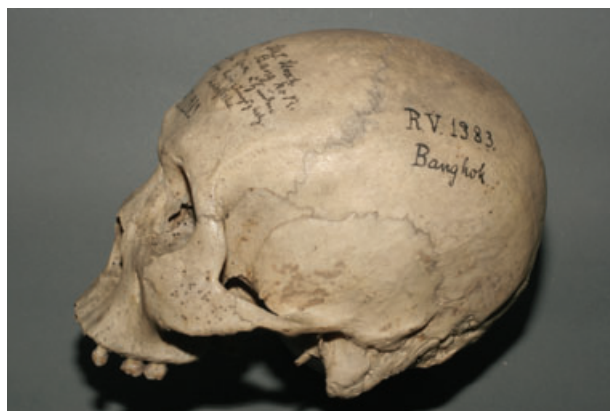
Schädelstätte. R. V. 1383. (Fig. 1).

The first line gives the date, which can be read as fourth of February (4. II.). The year cannot clearly be identified. S.M.S. Stosch indicates the name of the ship. The ship was named according to Admiral von Stosch, one of the admirals of that time. The abbreviation S.M.S. stands for 'Seiner Majestät Schiff' (His Majesty's Ship). S.M.S. Stosch (1877–1907) belonged to the fleet of Kaiser Wilhelm I. (1861–1888). It was en voyage to East Asia from 1881 to 1883. The Skull from Bangkok, obviously, found its way to Berlin via the S.M.S. Stosch as part of numerous anthropological specimens of the area. The date on the skull, therefore, most likely may be 1882 or 1883.

The second line ('Schädel von Bangkok') may be translated as 'Skull from Bangkok'. The lines in



**Figure 1** Inscription on the frontal bone of the Skull from Bangkok.



**Figure 2** Lateral view of the Skull from Bangkok (left side).

brackets may be translated as 'man eaten by vultures and dogs'. The word 'man' shows a dash over the 'n', indicating that a double letter (nn) was formerly used as a kind of an abbreviation for Mann (the correct spelling for the term 'man' in German). The following word 'Verbrennungsplatz' may be translated as cremation site and the last word in line 5 'Schädelstätte' may be translated as 'skull site'. The two initials R.V. stand for Rudolf Virchow the number 1383 is the registration number of this particular skull.

The skull is in good condition (Fig. 2); the mandible is missing. The age of this male individual probably was between 30 and 40 years. Most of the maxillary teeth have been lost, except the three maxillary right molars and the left first maxillary premolar as well as the first and second molar (Fig. 3). The occlusal surfaces show a moderate degree of attrition. The buccal surfaces of the six remaining teeth show some light-brown discolouration. The palatal aspects of the teeth, however, reveal dark-brown to black staining with some calculus formation and alveolar bone loss with root exposure (Fig. 4). The stains are characteristic for betel quid chewing. The effects of the betel quid chewing habit on the dental hard structures of the chewers have well been



**Figure 3** Remaining maxillary teeth show a moderate degree of attrition.



**Figure 4** Palatal view of the right maxillary molars showing betel quid stain, some calculus formation at the cemento-enamel junction and some exposure of the roots.

described. Marked attrition or wear of the teeth, associated with repeated chewing, produce sharp-edged and jagged tooth crowns (1). In addition, the teeth are stained black or brownish because of polyphenols contained in the areca nut and betel leaves (13).

Virchow, doyen of German pathology, was an avid collector of anthropological specimens worldwide. Among thousands of bone and skull specimens from all over the world, there is a number of skulls in his collection similar to the one described here with black stains on the teeth. Virchow used to present new specimens that were received during sessions of the 'Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte' (Berlin society for anthropology, ethnology and early history). Some of these presentations have been published such as those of the skulls from Tenimber and Letti (14). During these individual presentations of different skulls Virchow often referred to the teeth and their black stains. Phrases like 'Zähne schwarz durch Betel' (teeth black because of betel) or 'Betelfärbung' (betel stain) were often used in the text. These sentences may be taken as proof, that Virchow and members of the society were aware of the betel quid chewing habit in those skulls stemming from betel quid chewing societies. The major part of Virchow's collection survived World War I and II, and, for more than the three last decades, was secured and handled by its

custos (U.C.). Unfortunately, the authors of this report were unsuccessful in finding a written account of the skull from Bangkok.

The Skull from Bangkok is another proof that betel quid chewing was prevalent in former Siam.

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