

THE SURVEYS OF JAMES RENNELL, 1764-1777.

PREFACE.

1. Scope of this Memoir.—In 1914 I published a Memoir, accompanied by an Atlas, describing and illustrating in some detail the Survey work of Major James Rennell, F.R.S., first Surveyor-General of Bengal, and later Surveyor-General of India. At the time it was supposed that I had had access to all existing remains of Rennell's work. It transpired that there were, in the India Office, many maps by Rennell which were not included in the lists that were supplied to me originally.

Whilst employed in the India Office in 1916 upon an analysis of the old maps of Bengal, I examined all remnants of Rennell's work contained in the India Office collection, and it is now possible to withdraw the earlier publications referred to above, and to substitute this work, and to illustrate it with a far more exhaustive collection of maps, many of which are now published for the first time.¹

A very complete life of Rennell was published in 1895² by the late Sir Clements Markham.

Sir Clements Markham's life of Rennell did not deal with the technical side of his work. This Memoir deals with that question particularly, but also gives in section VII some of the salient facts of Rennell's life and career.

Previous to 1764, when Rennell first came to Bengal, he was often employed upon Marine Surveys. His charts have long since been superseded by more modern Marine Surveys. Interest in Rennell's Sea Charts is probably limited to their place in the History of Marine Surveys. Beyond giving a list of charts by Rennell still known to exist, this Memoir does not attempt to analyse Rennell's Marine Surveys.

2. Rennell's early work in Bengal.—From 1764 to 1777 Rennell was employed on Land Surveys in old Bengal (now Bengal, Bihar and Orissa and a portion of Assam), and his earlier work was entirely connected with River Surveys.

His first essay was to find the shortest all the year round route of river communication for boats carrying 300 maunds,³ between Calcutta (*via* Channel Creek, some 60 miles below Calcutta) and the main Ganges River.

The orders for this work are contained in Governor Van Sittart's letter to Rennell, dated 6th May 1764, which is transcribed below:—

"SIR,

The first service on which you are to be employed is the Survey of the Great River (Ganges) to the Eastward of Jelenghee; and upon this Survey

¹ To save confusion in the India Office collection, I have given throughout this Memoir full references regarding the whereabouts of the different maps mentioned.

² *Century Series*, 1895.

³ About 11 tons and drawing 2 to 2½ cubits. For draught figure, etc., see *Mem., As. Soc., Bengal*, 1910, Volume III, No. 3, pages 117, 224 and 225.

(2) Courses of principal watercourses to be "laid down," *i.e.*, actually surveyed.

(3) "Describe" the face of the country distinguishing hills; woods; jungles; morasses and arable lands.

(4) "Remark" the positions of towns and villages; forts; passes; ghâts, fords and ferries and any other important features.

(5) Scale of field surveys to be 2 miles to 1 inch.

(6) To note the boundaries of parganas when they were crossed in the course of survey.

(7) Not to survey major boundaries in great detail.

"It is not intended that you should follow the minute windings of it, but only to describe the general direction of it, with such a degree of exactness as may be expressed on a scale of 5 miles to an inch."

(8) To record the depths of streams at crossing points.

(9) If difficulty occurs in tracing a main boundary, take a main line of bearing and observe for latitude at each end, whenever the boundary is nearly meridional.

(10) Observe latitudes at important places.

(11) Azimuths or amplitudes for finding magnetic declinations to be taken frequently with the instrument used for observing ordinary angles during the survey.

Rennell left India in 1777, but it is probable that he used Dawes' work in those sheets his published Atlases (1779-80 and 1781) which refer to this area.

112. DuGlos.—Rennell used the work of Luis DuGlos (sometimes spelled differently) in Plates 40, 41, 49, 51, 52 and 55 (?) of the new Atlas.

DuGlos appears to have been a versatile Frenchman. He joined the Army in Bombay on February 28th, 1753, and retired as Lieutenant-Colonel in 1772. He served in the Engineers, Artillery, and as a Surveyor in Bengal. He complained of slow promotion on account of his nationality.

DuGlos had four European or Eurasian assistants: John Edwards, John Barnard Chausour, John Gerofflee and Francis Sydra.

In 1765 he surveyed in Midnapur, Burdwan and the Mahanadi River neighbourhood, and, under Colonel Smith (in command at Monghyr), he surveyed portions of South Bihar and the Gandak River.

He cast cannons and mortars at Dinapore and is said to have built the old barracks in that Cantonment.¹

His methods of survey were closely allied to those of Rennell, if not identical with them. Details of a meagre description are given in his diary.

A strange thing about this diary is that it does not mention Rennell. A stranger thing is that DuGlos found rhinoceros tracks close to Monghyr.²

DuGlos' diary mentions the following surveys of which no original records are forthcoming:—

- (1) Rohtas Fort (Shahabad).
- (2) Roads from Rohtas to Monghyr.
- (3) Ganges River Monghyr to Patna.
- (4) Ghagra River.
- (5) Survey of Cossimbazar Island.

Probably Rennell used all these records in his 5-mile maps.

113. Fennell.—Lieutenant Fennell was associated with Captain Camac (*see* paragraph 109 above) in Chota Nagpur. The remarks made regarding Camac apply equally to Fennell.

114. Huygens.—Captain Huygens' surveys were used by Rennell for Plates 40, 42 and 51 of the new Atlas.

¹ The above details are taken from—

(a) Bengal, Past and Present, page 45. Volume V.

(b) Bengal Public Consultations No 11 of 17th December 1772.

(c) A diary by DuGlos whilst employed as a Surveyor near Monghyr. (India Office Map Catalogue, Volume II, Part I. Orme Collection.)

² The distribution of this animal in the delta in recent years is important since it seems to show a rapid consolidation of the lower delta. On the other hand these animals may have reached Monghyr from Nepal, where there are still many rhinoceros.