

This is a print of Dick Glover's earlier "Revised Outline Plan", which shows that he had firm ideas on the final shape of his thesis. (SEW)

## **Revised Outline Plan**

### **Part I - Geomorphic section**

- 1 Introduction
  - 1.1 Introduction to region with regional map
  - 1.2 Introduction to Gaping Gill area with Gaping Gill area map
  - 1.3 Previous studies in the area. This includes Geological Memoir and map 1890, McKenny Hughes (1867) YGS Water Tracing 1904, Garwood & Goodyear, Dunham et al., Sweeting, C.A. King, Waltham, A, B and C
- 2 Geology and geomorphology of the area
  - 2.1 Regional geology with map
  - 2.2 Geology of Gaping Gill area
  - 2.3 Geomorphological features of the region with regional geomorphological map
- 3 Hydrology of Gaping Gill area - a summary of water tracing results and hydrological map
- 4 Glacial history of the area
  - 4.1 Glacial history of region with ice flow map
  - 4.2 Detailed glacial history of Gaping Gill area with ice flow and map of drift deposits

### **Part II - The origins and developments of cave systems**

- 1 Summary of the various theories of cave origins and developments and summary of important controlling features with diagrams: this will include Newson's "catastrophic" theory
- 2 D.C. Ford's synthesis of cave origins and developments
- 3 The likely controlling features in the Gaping Gill area in the light of Ford's theory
- 4 A theoretical model of the development of a cave during a glacial-interglacial-glacial cycle. (i.e. excavation/enlargement - pause - filling with outwash sediments - stalagmite deposits. with diagrams and with reference to the Newson 'catastrophic' theory.

### **Part III - A detailed description of the Gaping Gill System and of Ingleborough Cave**

- 1 History of exploration with chronological table of important discoveries
- 2 A description of Gaping Gill passage by passage and entrance by entrance including a geological section based on underground observations, diagrams of morphological features, maps of major joints and faults and structural features, map of lithological control, map of former flow routes, map of location and nature of fill, map of location and type of stalagmite deposits. Analysis of the passages in Gaping Gill both in terms of direction and vertical separation
- 3 Description of Ingleborough Cave and all the above points repeated for Ingleborough Cave
- 4 Brief description of caves in Clapham Bottoms - Grange Rigg area and on the allotment
- 5 Brief description of caves in the Hurnel Moss and Newby Moss areas

#### **Part IV – Discussion**

- 1 Lack of internal evidence of age, apart from
  - (a) relative dating of passages one to another where possible
  - (b) dating of stalagmites
  - (c) dating of fill
- 2 Discussion of relative ages of passages at Gaping Gill and explanation of five following sequences of development
- 3 Discussion of relative ages of passages in Ingleborough Cave and explanation of three following sequences
- 4 Discussion of reasons for lack of external (surface) evidence for glacial history of the region, compared with other regions and explanation of the danger of attempting to correlate stages of development in the absence of any intrinsic dating evidence for the caves

#### **Part V - Conclusions**

- 1 Dividing of cave systems into pre-glacial and post glacial types
- 2 Possible relationships between above types and surface evidence i.e. valley deepening, outlet blockages etc.
- 3 Summary of major control features in the development of Gaping gill and Ingleborough Cave in relation to accidental features of surface topography
- 4 Brief summary of phases of development in the cave systems and correlation with a tentative glacial chronology of the region