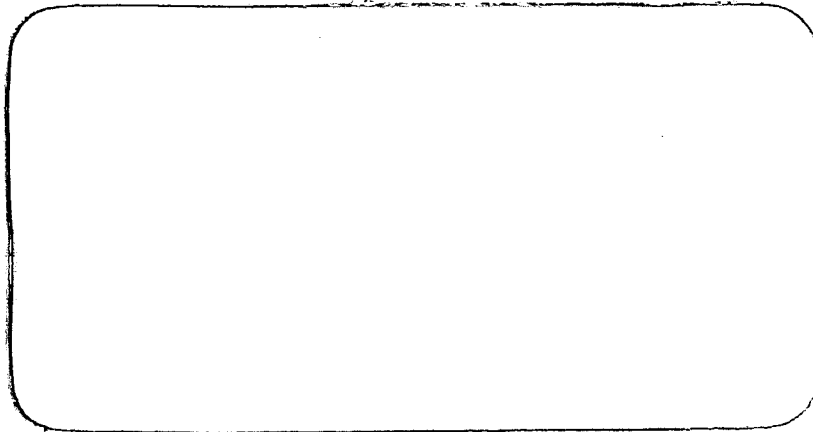




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Report on a Visit to  
LUSAKA, ZAMBIA

by

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## INTRODUCTION

The purpose of the visit was to provide a short training course in photogeology and remote sensing to Zambian geologists on the staff of the Geological Survey of Zambia (GSZ). It arose from a request made by a former Acting Director of the GSZ who believed that such a course would be preferable to the sending of one or two Zambian geologists to Britain to attend one of the three-months courses on photogeology and remote sensing provided by IGS for overseas geologists. It was appreciated that a course in Zambia would be shorter than one given in Britain but would allow a greater number of Zambian geologists to participate at one time.

Instruction was provided for eight members of the GSZ. Senior staff cooperated fully in providing space for the lectures and practical exercises, office accommodation for the instructors and transport for the instructors between the hotel and office building.

The participants on the course were young and inexperienced geologists but were keen and anxious to learn, and showed considerable interest in both the lectures and the practical exercises. We believe it to have been a success.

## NATURE OF THE COURSE

Emphasis was laid on the geological interpretation of aerial photographs. Lectures were given on elementary photogrammetry including the geometry of the single photograph and the stereomodel; flight planning and photographic processes; geological interpretation and annotation; parallax, the measurement of parallax differences and the geological uses of such measurements; the making of maps by applying the radial line principle; the transfer of data; the Landsat system and products and also on fracture trace analysis. Periodic written tests were given on a variety of topics covered by the lectures. However, for most of the time the students were required to progress through a graduated series of interpretation exercises, many of which were of areas in Zambia and neighbouring African countries; these exercises illustrate a wide variety of lithologies and

structures from differing climatic areas, and a wide range of vegetation cover. The final aerial photograph exercise involved the making of a photogeological map of an area in Somalia. Landsat interpretation was undertaken of areas in Zimbabwe and Botswana and instruction was given in the making of histograms for fracture-trace analysis.

All the course material and instruments were transported from Keyworth as it was considered unlikely that the GSZ would possess the necessary number of stereoscopes in good working order, nor the projecting equipment needed in lecture presentation. This assumption proved to be correct.

Of the eight course participants, two experienced some problems arising from their limited stereoscopic acuity but all expressed interest not only in the techniques demonstrated but also in the geological content of the exercises. Their inexperience in field geology was demonstrated when they were asked to draw sections through the areas they were studying and particularly when they were faced with the task of compiling a map from their photogeological data. Their ability to make valid interpretations from air photographs could be seen to improve as they progressed through the series of exercises. We feel that in addition they benefited in a more general sense by being brought into contact with a wider spectrum of geological problems than they had previously experienced.

#### CONDITION OF THE GSZ

One of us (FH) last visited the GSZ before Independence and it is apparent that the department is at present in a fairly run-down condition, a state which is reflected in the dilapidated condition of the headquarters building (although the building appeared to be little worse than many other Government offices in Lusaka).

The posts of Director and Deputy Director are vacant. Mr Money, who, as Principal Geologist, had been Acting Director, was suspended from duty at the time of our visit and this appeared to have had a detrimental effect

on the morale of the OSAS officers whom we met. Mr Green, who was Acting Director at the time of the course, appeared to be aware of certain areas where administrative change was needed but was restricted in his course of action by Dr Mwanang'onze, the former Director and present Permanent Secretary, by his lack of true authority and also by the possibility that Mr Money could be reinstated at any time. All OSAS officers appeared to find living in Lusaka difficult due to a high incidence of crime and to a shortage of imported goods, for many of which there are no local substitutes.

There are a number of Indian and Philippine geologists on the staff of the GSZ. Mr Ray, who is Principal Geologist in charge of mapping, is an Indian and a graduate of ITC in Delft. He formed our chief point of contact with the GSZ staff, and was extremely helpful in organising the course. Some of the other non-British expatriates whom we met appeared to be lacking in experience. We did not meet any laboratory staff.

The British High Commission was helpful in meeting us on our arrival, and clearing the course material and instruments through Customs. They were anxious to provide us with transport from their pool of used Land Rovers, and it was unfortunate that this plan was nullified by their unroadworthiness.

#### CONCLUSIONS

It would require a considerable effort to restore the GSZ to a level approaching its former state of efficiency and effectiveness and would necessitate the appointment of experienced geologists of proven administrative ability to the posts of Director and Deputy Director. It would also require the appointment of a sufficient number of experienced geologists to allow the local professionals to obtain on-the-job training. Failing this it is felt that the sort of training provided by the recent course must be of considerable benefit.