

CORRESPONDENCE

WHAT AILS HIGHER EDUCATION IN GEOLOGY?

Recently there was an article (Aswathanarayana, 1997, JGSI, v.49(4), pp.454-458) drawing attention to the need, particularly in the Developing Countries, of modifying geological education to suit the requirements of the times. A plea was made to introduce PC as a training and monitoring tool and a possible structure of a course of 4-year duration, say a B.Tech. in Geology, after +2 (or Intermediate) course, was also outlined. For those who might be under the impression that the decline in the interest of students in geological education is confined only to our country, the recent editorial in the Journal of the Geological Society of India (Radhakrishna, 1997, JGSI, v.50(5), pp.527-530) must come as an eye-opener and revelation. The author has therein, extensively quoted from the Presidential Address of Professor E. Moores to the Geological Society of America, in 1996 dealing with the crisis in geology in general and what has to be done to tackle this problem. Certainly this is a laudable, all-compassing long term course of action to resurrect and improve geological education in the world as a whole.

It is now necessary to trace the development of the course content, particularly in the Post-graduate Departments of Geology in this country, and to see to what extent attempts were made to modify the content to suit the needs of the profession and how after a particular stage the present crisis has developed.

The Curriculum: Till the 1940s the subjects taught were generally the following: crystallography, mineralogy, petrology, palaeontology, stratigraphy, structural geology and economic geology. In the 1950s engineering geology was added, followed by hydrology. During this period students invariably had field training in surveying and geological mapping conducted either by the trained teaching staff of the Department or they were deputed to professional organisations where they were associated with field geologists for periods ranging from a fortnight to about a month. A separate course in Applied Geology was also started in some Departments with the hope that this would enhance employment potential. 1970s saw the need to update our knowledge to some extent in geochemistry, geophysics and modern trends in petrology and structural geology. Study of crystallography, mineralogy, palaeontology and stratigraphy was slowly reduced with the hope that this would or should be taken care of in the undergraduate curriculum. This also became necessary in order to accommodate enhancement in the syllabi of petrology, structural geology and economic geology, and introduction simultaneously of new ones like petroleum geology, marine geology, nuclear geology, geomorphology and photogeology in some of the Departments. It can be said that the students who came out during this period were fairly well-trained and what is more, there were also opportunities in professional organisations with recruitment almost regularly between 1960 and 1980. The teaching staff recruited, during this period, were also generally the best from among those passing out and with the UGC scale of emoluments implemented in almost all the Universities, those really interested in teaching and research, stuck on to the teaching profession.

The Decline: It may be stated that the decline in standards started in early 1980s. It cannot be denied, however, that within the sea of mediocre departments, there are islands of excellence, both among the IITs and Universities. The possible reasons are:

1. Proliferation of postgraduate departments of geology in the country commencing from 1970s.
2. Reduction in recruitment causing frustration and disinterest right from the beginning.
3. Geology was not among the subjects generally sought after by the best students, with many

drifting to engineering, medicine, business administration and of course of late into information technology.

4. Majority of the teaching staff in most of the Departments were past their prime, who having taught only the classical branches of geology, to the best of their ability, were not equipped or were averse to teaching new subjects, even if that was needed to make the course useful.

The cumulative result of all these is that we have postgraduate Geology Departments in the country with single digit students in many classes and not necessarily the interested ones, and some of them passing out without any knowledge of geological mapping. They mark their time to take a degree and branch out to greener pastures, after some additional training.

A Possible Solution: It is learnt that some Departments of Geology, Geography and Earth Science have already been closed and some are to be closed in the near future in the United States of America. A professor from one of the universities in US informs that the Managements of some of the Universities have indicated to the faculty of such departments that they will be closed from 3 to 5 years and they are advised to equip themselves in any border-line subjects and thrust areas within this period.

In India it may now be necessary to combine many related departments and/or add new departments with specialized staff, and structure new courses. The course content can be as suggested in the article referred to above (Aswathanarayana, 1997, *Ibid*, p.457) or any other to suit the needs of the time, region and professional openings available. In some of the socialist countries, during the last two decades, the number of students admitted into professional courses were as per the recommendations made by their Government Departments (Ministries), keeping in mind the number needed in successive years in the particular field. This would ensure that there is no wastage of trained personnel. It is doubtful if such a system is possible in our free country.

In 1990-91 the University Grants Commission sponsored a project conducted at the University of Roorkee, to upgrade and revise the syllabii of undergraduate and postgraduate courses in geology. This was done and the report submitted to the Commission. But nothing seems to have come out of it. Thus, it is now necessary that academically biased and professionally competent accredited representatives of professional organisations in the field of Earth and related sciences in the country like Geological Survey of India, National Atlas and Thematic Mapping Organisation, India Meteorology Department, National Bureau of Soil Survey and Landuse Planning, Central Groundwater Board, National Geophysical Research Institute, and National Institute of Oceanography representing geology, geography, meteorology, pedology, groundwater, geophysics and oceanography respectively should meet and make some concrete suggestions for an utilitarian course. The need to involve these organisations is with a view to make them plan the equipment of future students in earth science, since they are the major employers and are aware of the future needs of the organisations. If the student is exposed to the related disciplines at the impressionable young age itself while studying, then the advantage is greater to him and to the organisation. However, it is not the intention here to make the student a jack of all trades, nor is it necessary that *all* the existing departments in earth sciences should take to this avenue only. The desire is to work out two or three streams of courses, both from the point of view of the student's future and also keeping in mind the highly interdependability of the contents of the courses, for a holistic appreciation of things happening on the surface of the earth and to solve problems connected with it.

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