

## Goitre in India

## Iodine prophylaxis falters

New Delhi

A SURVEY by the All India Institute of Medical Sciences (AIIMS) in New Delhi has made the alarming discovery that one out of 25 babies born in the country's endemic "goitre belt" is hypothyroid and is thus destined to be mentally retarded. Some 40 million Indians have goitre and about 300 million live in the goitre belt which runs through 15 states south of the Himalayas. Considering that about one million births take place annually in this region, the AIIMS data suggest that India may be adding about 40,000 idiots every year to its growing population simply because they do not get enough iodine in their food.

The survey was sponsored by the Department of Science and Technology and carried out by a team led by Dr N. Kochupillai of the department of medicine at AIIMS. The survey covered three of the 16 goitrous districts in the state of Uttar Pradesh, where the incidence of goitre varies from 30 to 70 per cent. Nearly 5,000 children born every year in each of the goitrous districts are destined to be mentally retarded, Dr Kochupillai said. "What we found is alarming", he added, "goitre cannot be simply dismissed as a cosmetic problem."

The survey of neonatal hypothyroidism was made possible for the first time in India by a sensitive and specific radioimmunoassay developed at AIIMS for measuring



Incidence of goitre in India. Areas of endemic goitre are shown shaded.

picogrammes of thyroid hormones in cord blood samples collected on filter paper. Samples were collected by health workers during each delivery at the village primary health centres and sent by post to AIIMS for analysis. Three different thyroid hormones were measured and a diagnosis of hypothyroidism was made if all three indicated thyroid failure. The AIIMS group has so far analysed about 1,400 blood samples, of which four per cent are positive for hypothyroidism. In contrast, only one case of hypothyroidism was found among the 1,400 samples taken from Delhi and Kerala state, where goitre is not endemic.

The field survey by the AIIMS team also revealed a high incidence of cretinism, deaf-mutism, squints, stunted growth, hearing and speech disorders among goitrous patients. In some villages of Gonda district, the entire population is goitrous. Women hide their neck-swelling under multi-stranded necklaces, and girls have their throats painted with iodine concoctions sold by quacks. The IQ of children affected by goitre is so low in Katrasanabajpur village that they hardly finish the fifth standard and 70 per cent drop out even earlier.

The prevalence of goitre in the Himalayan belt was well known in the early decades of this century. A controlled trial of the prophylactic value of iodized salt was mounted in the Punjab in 1954 and



Goitrous neck-swelling

both iodate and iodide were known by 1962 to be effective (see Ramalingaswami, V. *Bull. WHO* 49, 307; 1973).

The findings have come as a shock to the government, whose 20-year-old programme to provide iodized salt to the goitre belt has failed miserably due to logistics and the apathy of state governments. The village primary health centres do not list goitre as a health problem and people have not heard about iodized salt, says Dr C. Gopalan, former director general of the Indian Council of Medical Research and now president of the Nutrition Foundation of India. Uttar Pradesh state has yet to identify the sites for two iodization plants donated by the United Nations International Children's Emergency Fund (UNICEF) some four years ago. The control of goitre affecting 40 million people continues to be nobody's business.

The AIIMS team is now injecting iodized oil donated by UNICEF in selected populations in the study areas. The injections will dissolve the neck swelling but can do nothing to correct the irreversible mental damage that results when hypothyroidism is untreated in the first year of life. The team has also formulated a \$4 million scheme to administer iodized oil to six million goitrous women of reproductive age.

K.S. Jayaraman

## US high schools

## Models for innovation

St Louis, Missouri

TWO recent innovations, in North Carolina and Missouri, have relieved the general gloom about the quality of US public education. Both state-backed programmes aim to upgrade the quality of science and mathematics education by bringing high-school students more directly into contact with professional people.

North Carolina's model is its School of Science and Mathematics (NCSSM) at Durham. It is a residential public school open to 400 juniors and seniors from the state who have been judged to show exceptional promise. The state meets the cost of room and board as well as tuition. Classrooms and dormitories are housed in an old hospital complex. The school was begun at the urging of Governor James B. Hunt and has now graduated its second class.

Besides offering a challenging academic programme, the school puts its students into the laboratories of working scientists. It is within driving distance of four universities as well as Research Triangle Park. Most students choose to enter the school's mentor programme, in which they work on a project supervised by a scientist from one of the universities or the research park. Each student spends half a day each week in the laboratory and some work summers as well. Some professors attend the campus to help the school's highly trained staff.

The excellence of the teaching at the school is supposed not to be confined to the student elite chosen to attend. To upgrade science and mathematics education in other public schools in the state, NCSSM conducts workshops for teachers and brings in visiting teachers as fellows. At least one state, Louisiana, is ready to follow North Carolina's example and a further 20-25 are interested.

In a less ambitious programme, but one also likely to be copied, Washington University at St Louis is "recycling" scientists and engineers from private industry into science and mathematics education. The idea came from Carol H. Pauk, assistant director at the Graduate Institute of Education, and was stimulated by a programme of early retirement among the nearby Monsanto Company's professional staff. She persuaded the company to pay most tuition costs and to adjust the working hours of employees wanting to take the certification courses necessary to teach science and mathematics.

Pauk's initial concern that professionals switching careers in their 50s might not be able to adjust to the stresses of the classroom has not been borne out — perhaps because all those taking the course so far are married to teachers.

Karen Freeman