exposed in the quarries of Kharodivadi. A large number of chemical analyses of rocks of this group are now available and they show that they are invariably supersaturated with silica, and generally show the presence of primary quartz. The genesis of these rocks cannot be wholly explained on Bowen's hypothesis of crystallisation-differentiation, and it seems necessary to consider other alternative hypotheses such as the pure melting of sial 'palingenesis' and magmatic assimilation, i.e., the solution of sediments by the magma.

A series of olivine-bearing rocks is developed in connection with the basalts and intruding into them; and these appear to occupy a place complementary to that of the acid series described above. It appears that these olivine-bearing associates of the Deccan Trap may have two types of origin, depending on whether they crystallised from the normal basalt or from an ultra-basic melt. A full discussion of this problem involves a consideration of the physical conditions at some

depth in the interior of the earth.

Then coming to the interesting rock types composing the igneous complex of Mount Girnar, we have mainly to deal with the rocks of the central mountain which are of an intermediate character -syenites, diorites, nepheline-syenites, and monchiquites. Of these the nepheline-syenites are by far the most interesting. The origin of these nepheline-syenites is intimately connected with the syenite and diorite of this hill by the presence of a common mineral which has been distinguished under the sub-species 'Girnarite'. It is also intimately associated with the masses of lamprophyre in a manner which suggests great fluidity of the felspathoidal magma at the time of its consolidation. There is very little doubt that the dark masses of lamprophyre are largely composed of small crystals of the ferro-magnesian minerals which occur in the associated diorite and syenite, and represent segregations from these magmas. A detailed microscopic study of these rock specimens has furnished evidence in favour of assuming a discontinuous reaction relationship among the ferro-magnesian minerals of the type

Olivine Brown augite Green augite Biotite Girnarite. Much field and laboratory work is needed before we can arrive at a true solution of the origin of these rocks. With the diversity of types which occur in it, a study of their origin would cover the vast region of igneous petrology with all the intricacies of petrogenesis which await solution.

There is a famous saying "He knows not England, who only England knows." This may truly be said of the Deccan Trap.

MEDICAL AND VETERINARY RESEARCH.

President: Lt.-Col. S. S. Sokhey, M.A., D.Sc.,
M.D., D.T.M. & H., I.M.S.

In the course of his address on the relation of research to training in medical schools, Col. S. S. Sokhey deplores the lack of scientific outlook in both the teachers of medicine and the medical practitioners in the country. With the exception of the great work of the Indian Research Fund Association, medicine in India is not productive in the sense that other sciences are. This is largely due to the fact that medical schools are not turning out men with the desired scientific outlook and habits of serious application associated with trained

investigators. Some teachers argue that the chief concern of medical schools is to turn out practitioners of medicine and that medical research as well as the training of research workers should be carried out in separate institutions which will be specially devoted to that work. Such an assertion only betrays the want of understanding of the scientific spirit of medicine and a tendency to treat the subject as an empiricism. The present state of affairs is highly undesirable and in view of the prospects of increased responsibility for medical education in the country, it is desirable that we should now make a critical examination of the position and model our system of training along the lines pursued in Europe and America.

Medicine has now attained the status of a science, so it would be faulty to speak of 'systems' of medicine. Pre-scientific systems are based on false doctrines, so the only valuable things that remain of them are a number of drugs which are now being investigated by scientific men. On the other hand, it is futile to waste money on Unani and Ayurvedic medical schools and hospitals which are being conducted by men

who have neither scientific outlook nor scientific training. It is true that there is shortage of medical men in the country, but the best way to meet the situation is to organise mobile dispen-

saries and large bodies of health visitors.

The medical schools in India are still of the 'clinical' type and aim at only producing 'practical doctors'—men and women who can be trusted to recognise, by rough and ready means, the disease symptoms and carry out treatments by standard methods that they have been taught. The training given in such institutions is faulty because the students lose their critical faculty and become prey to dogmatism. This is chiefly due to the unsatisfactory system of clinical study which reduces diagnosis to the level of empiricism. The right type of training would be possible only if the students are taught to associate their clinical observations with known physiological, pathological and biochemical phenomena so that they would have a real insight into the nature of the condition that they are treating. The organization of teaching should also be improved by appointing whole-time professors who will be actively engaged in research.

The pre-clinical sciences, anatomy, physiology and pathology are now being taught by whole-time professors, but the latter receive practically no assistance in their work: nor do they have proper facilities for research. These defects should be soon attended to and the professors given the requisite technical assistance and material facili-

ties for their researches.

The importance of post-graduate training in different branches of medicine cannot be over-emphasised. The right type of students should be selected and encouraged to conduct original work either by themselves or in association with the professors. The most promising among them should also be assisted with Fellowships to proceed abroad and work in the laboratories and clinics of distinguished men.

Col. Sokhey's address contains a few hometruths which none will deny. His condemnation of the Ayurvedic and Unani systems is, however, a little too severe. Even empirical systems which have proved consistently successful must have a scientific back-ground which the practitioners of those systems may not be in a position to appreciate. It remains therefore for the trained scientist to approach those subjects with some spirit of modesty and endeavour to explain the treatments and related clinical observations in terms of modern medicine.

ANTHROPOLOGY.

President: Rai Bahadur Ramaprasad Chanda, B.A., F.A.S.B.

In the Anthropology section Rai Bahadur Ramaprasad Chanda has dwelt in his presidential address on the origin and history of the spirit of renunciation and self-sacrifice, Sramanism, in the Hindu religion. From the writings of Megasthenes and other Greek travellers it is seen that the Buddhist śramanists were of two kinds, the Hylobii (vānaprasthas) and the Bikshus, Yatis, and Sanyāsis, who practised self-mortification and meditation. Suicide, as the final act of asceticism, which was in vogue at the time, had not the support of early Buddhist and Brahmanic records, though some others such as Nirgranthas and Jain śramanas had glorified it. In more remote days, i.e., in the days of Apastamba, $\dot{s}ramanas$ were not regarded as superior to grihasthas. The extracts from the earliest Dharmasutras show that one could attain moksha by performing the pious deeds of a householder, and the *śramanas* were not sanctioned by the Vedas. Sramanism could not have been an offshoot of a Vedic Aryan institution, but must have had its origin outside the pale of Vedic Aryanism. Among the Vedantists, the school of Badarayana was opposed to a non-Aryan origin of *śramanism*. According to the Vedanta-sūtra mõksha can be attained only by the knowledge of Brahman-Atman and one need not perform the Vedic rites of a householder but may renounce karma and pursue the knowledge of Brahman as a śramana. Jaimini on the contrary contends that the rites of a householder such as agnihotra must not be given up in the face of the direct opposition of the Vedas. The President traces the origin of *śramanism* to the yatis of the pre-Vedic age. That they had been prominent in the days of the Indus civilisation is seen from the various postures of the figures discovered at Mohenjo-Daro. They were sorcerers and medicine men and later adopted the practice of renunciation and self-mortification as an effective means of acquiring supernatural powers. This quiet non-Aryan institution gradually overcame the old Brahmanism and became modified by it. The later smrithis and puranas and Manu advocated it. The rise of Sankara in eighth century Λ .D. gave a fillip to śramanism. Sankara organised the Brahminic order of Dandasanyāsis which still survives. Since his days the Vedānta-sūtra of *Bādarāyana* has become the basis of almost all the Brahman reformers, whether Vaisnava or Saiva. To-day *śrumanism* or the renunciation of the worldly pleasures is held in highest veneration by the Hindus, and it is now believed that siddhi or moksha is possible only for a sanyāsi. In Bengal the modern Vaisnavas, i.e., the followers of Caitanya, and the Sāktas give preference to bhakti as a means to attain moksha. This peculiarity of Bengali psychology is attributed to a physical trait, brachycephaly. The change that must have happened among the Vedic Aryans in the remote past was perhaps similar to the quite recent tendency among educated Bengalis to seek initiation from sādhus. While śramanism has made great contributions to Indian culture and philosophy, it has liberated toxins in the social organism which have undermined its health. By dying without issue for hundreds of generations some of the best elements of the population have been eliminated, leading to the decline of the Hindus.

PSYCHOLOGY.

President: Manmatha Nath Banerji, M.Sc., B.L.

THE address commences with a reference to the organisation and work of the Indian Psychoanalytical Society and the Indian Psychological Association which were inaugurated in 1922 and 1926 respectively. The former is affiliated to the International Psychoanalytical Association whose ostensible object is to popularise the basic principle of the unconscious life of the human mind and the technique of psychoanalysis as a curative agent of mental obsessions. The address proceeds to point out that ancient religious philosophies of India and her social and cultural structure were based on psychological foundations. It is maintained on the authority of ancient scriptures, that the purification of mind is the source of happiness, spiritual and secular and for the eradication of all antisocial tendencies. Then a plea is entered for the revival of the study of applied psychology for "the salvation of so vast a country as India, a hundred times more extensive work on psychology is necessary than is being done now. In India there is enough scope for hundreds of Laboratories and Institutes, not necessarily in the Universities and Colleges, but managed by outside agencies as well." The practical applications of psychological researches in the practice of medicine. in the education of the normal and abnormal child, in the selection of vocations, in the control and management of the criminal, in the ordered progress of industries and in the stability of society, must make the study superlatively important. The power to utilise the results of psychological studies for vocational guidance and selection is perhaps an important one and it may even be said to be an indispensable equipment of the teacher and not one in a hundred has the correct appreciation of this branch of knowledge of the child mind for a proper evaluation of its normal working, its potentialities and its inherited predispositions which have to be care. fully watched, controlled and developed. For lack of adequate scientific training of the teacher, there is a great waste of precious human material which, if wisely handled, ought to contribute to the prosperity of the state. A medical examination of the school children is no doubt desirable, but still more important is a "thorough mental survey of the youth of the country". "It is necessary that every scholar should be given mental and scholastic tests at least twice during his career and his personality tested to detect if anything went wrong, by one thoroughly trained in experimental psychology and psychoanalysis." In America and Europe intensive efforts are made to provide vocational guidance to school children and to recruits to the army and air service in regard to their suitability for the kinds of service in these departments. Incidentally such experiments