

News and Views.

Bicentenary of Gabriel Jars.

On Jan. 26 occurred the bicentenary of the birth of the eminent French mineralogist and civil engineer, Gabriel Jars, the author of "Voyages métallurgiques", which at the time of its publication was a cyclopædia of information on mining in Europe in the middle of the eighteenth century. The son of a miner, Jars was born at Lyons and became one of the earliest students of the *École des Ponts et Chaussées*, which had been founded in 1747 for the training of engineers for the Government service. Having gained both practical and theoretical knowledge of the art of mining, he was sent in 1757 with Duhamel du Monceau to visit the mines of Europe, with the view of the introduction of improvements into the mines of France. His first tour took him through the central countries of Europe, but afterwards he visited England and Scotland, and the Netherlands and Scandinavia. In 1768 he was admitted a member of the Paris Academy of Sciences, and he was arranging the accounts of his journeys when he suddenly died of sunstroke. His death took place at Clermont on Aug. 20, 1769, when he was only thirty-seven years of age. His brother had accompanied him on his later journeys, and to him fell the task of publishing the "Voyages métallurgiques", which appeared in three volumes during the years 1774-81.

Working-Class Conditions in Bombay.

A SOMEWHAT lurid light is thrown upon the effect of industrialism and its attendant conditions on the 'working classes' of Bombay by an analysis of certain statistics published by Dr. G. S. Ghurye and S. R. Despande in the *Indian Journal of Economics* for October. The statistics were collected by the Bombay Labour Office in co-operation with the Young Women's Christian Association with reference to infant mortality. The number of individuals from whom the particulars were compiled was 2053. The subjects of the inquiry were mainly of agricultural class origin, and mostly from the Konkan. After migration to the city they had usually kept in touch with their place of origin and visited it at least once a year. Their wages are low; they are permanently in debt; and ninety-seven per cent of them live in one-room tenements which are dark and ill-ventilated. The factory hours for mothers range from eight to ten a day. The age-range of the women workers under consideration is 15-45 years and above, the highest percentage, 23.8, lying in the age-group 21-25 years, the next, 22.8 per cent, being in the group 26-30 years. The drop in numbers above twenty-five years of age, which becomes very marked above the age of thirty years, falling to 11.3 per cent, is generally due to the return of the women workers to their place of origin, permanently incapacitated by illness.

THE average age of Bombay working women at the birth of the first child is eighteen years, the consummation of infant marriage, usually delayed until some time after puberty, taking place perhaps a little

later on the whole among the workers. It is believed that in Indian women child-bearing ceases early, some considerable time before the menopause, say at about thirty-five years; but inquiry into cases where the family is evidently complete shows that in these workers it takes place at about twenty-eight years. This is supported by further data which show that the average interval between births is 2.8 years, and that the average fertility, taking women more than thirty-five years of age, is 4.4. An examination of the data in the light of these two sets of facts suggests that the figure of twenty-eight years as the close of child-bearing represents a fact and is not due to an accidental selection. The authors consider two features in these statistics disquieting, namely, the early age at which child-bearing ceases and the fertility rate, which is too low in relation to the mortality rate of Bombay city. They point out that there is a danger that the 'working class' of Bombay will fail to keep up its numbers. To others, however, it may seem that industrial and housing conditions which appear to result in the permanent disablement of a large proportion of the female population at the age of thirty or thereabouts, even taking into account the early maturity of the Indian woman, and reduces the child-bearing age by seven years, are badly in need of investigation.

Proposed International Congress of Anthropology.

CORDIAL support has been given to the suggestion that a new international congress should be organised to cover anthropology and ethnology. Such a congress would meet the need created by the strict limitation of the field covered by the new International Congress of Prehistory and Protohistoric Sciences, which is to meet for the first time in London this summer. According to a communication from Prof. J. L. Myres which appears in *Man* for January, inquiries made on behalf of the Council of the Royal Anthropological Institute have not only elicited cordial expressions of approval, but also the matter has been taken up actively in Germany by Dr. Eugen Fisher. As the result of a consultation with his colleagues, he has written recently to the Council of the Royal Anthropological Institute to express the fullest approval on behalf of all the full professors of anthropology in Germany. They express willingness to concur in any arrangements the Institute may make for the formation of an international congress on the lines laid down last May for the Congress of Prehistory. It is suggested that similar statutes and constitution should be formulated; that the congress should be organised in two sections, one for anthropology and one for ethnology; that four languages should be officially recognised for the proceedings, and that meetings should take place at intervals of four years, preferably in the year in which the International Congress of Americanists meets in Europe. Such a date would provide for an alternation with the Prehistoric Congress, which will meet in London in 1932 and, probably, in Oslo in 1936. The first meet-

ing of the Anthropological Congress would take place when the next meeting of the Americanists is held in Europe, that is, in 1934. The Council of the Royal Anthropological Institute accordingly invites the anthropologists of all countries to co-operate in forming such a congress.

Isolation of Vitamin B₁.

In the second issue of the *Zeitschrift für Physiologische Chemie* for 1932, Prof. Windaus and his co-workers announce the isolation of the anti-neuritic vitamin B₁ in what appears to be the pure state. In 1926, Jansen and Donath reported the preparation from rice bran of a crystalline substance having the formula C₆H₁₀ON₂, which was believed to be the vitamin, but subsequent work, notably that of Jansen, Kinnersley, Peters, and Reader, in 1930, showed that the substance was not pure. In 1929, Windaus took up the preparation of vitamin B₁ from yeast, and in the initial stages of purification he followed well-known lines. From the neutralised raw extract he has recently prepared the gold salt, decomposed this with hydrogen sulphide, and from the filtrate isolated the picolonate, which is dimorphous. Analysis of the picolonate gave the surprising result that the vitamin contains sulphur as well as nitrogen: its formula is probably C₁₂H₁₇N₃OS. The hydrochloride was prepared; its absorption spectrum gave a maximum at 250-260 μμ, and its potency, determined on pigeons, was 1.4-3.3 γ, as against 9 γ found by Jansen and others for the substance isolated by the original method of Jansen and Donath. Prof. Windaus states his belief that he has now isolated the pure vitamin.

Structure of the Cell Nucleus.

In his presidential address to the Royal Microscopical Society delivered on Jan. 20, Prof. R. Ruggles Gates reviewed present knowledge regarding nuclear structure, especially in relation to genetics. On the basis partly of investigations in his own laboratory, Prof. Gates believes that the nucleolus contains two substances, one of which enters the chromosomes in prophase and leaves them in the telophase of mitosis, and that the chromosome is a double structure throughout the mitotic cycle, a split of the chromonema occurring in metaphase for separation in the following metaphase. The chromonema is derived by the union of chromosomes in prophase, and during interkinesis the chromosome is represented by a double chain of chromomeres. From the evidence of karyomeres in animal cells, the nucleus is regarded as a compound structure, and it was further suggested that the spindle is also compound, the real unit in mitosis being a chromosome with its surrounding karyolymph, which becomes transformed into spindle fibres.

PROF. GATES discussed the relation of chromomeres to genes, pointing out that we have no real knowledge of why the chromosome behaves as a unit. He suggested that the chromosomes of Protista are undifferentiated along their length, and that genic mutations have led to their gradual differentiation, with

the probable result that genes are of different sizes. The gene is, however, not a representative particle but a physiological unit, the conception being necessitated both by the phenomena of crossing-over and of mutation. Each genic difference affects many or all parts of the body. Estimates indicate that the gene is of the same order of size as virus particles, and some at least cannot be composed of more than a few hundred molecules. The specific attractions which arise between chromomeres in meiosis belong to the level of organic rather than physical phenomena, and are at present wholly unexplained. Such conditions as high and low temperatures may inhibit this attraction, and genic mutations have arisen in which asynapsis occurs in one or in both sexes, leading to pollen or seed sterility. Prof. Gates stated that it is not at present clear exactly where the limitations of the gene theory lie.

The Expanding Universe.

In his Friday evening discourse at the Royal Institution on Jan. 22, Sir Arthur Eddington discussed the expansion of the universe. Outside our own galaxy of stars there exists a vast number of external galaxies, each containing many millions of stars, which appear as nebulae. These are to be found running away from us almost unanimously; and the farther away they are, the faster they recede. This effect has been observed up to a distance of more than a hundred million light-years; the speed there reaches 20,000 km. a sec.—as fast as an alpha particle. It looks at first as though the nebulae must have a particular aversion to us, but it is not difficult to see that the recession is the effect of a general expansion of the universe, and is not especially aimed at us. An effect of this kind has been anticipated theoretically. Einstein's law of gravitation contains a term representing repulsive force, which is ordinarily minute and negligible; but at very great distances the repulsion becomes large and overmasters the ordinary gravitational attraction, so that very remote objects tend to scatter apart. The theory, however, does not predict the magnitude of this 'cosmical repulsion', and hitherto it has only been possible to evaluate it from direct astronomical observations of the nebulae. Sir Arthur is convinced, however, that precisely the same cosmical term is concerned in the theory of the atom and supplies the standard which determines, for example, the radius of an atom. So that out of the theory of the atom (without any astronomical observations) we can predict the rate of recession of the nebulae; or alternatively, astronomical observation of the distances and velocities of the nebulae is a method of determining the masses of the electron and proton. Sir Arthur stated that, in his opinion, this astronomical phenomenon of the expanding universe is the main clue by which we can ultimately unravel the mechanism of the atom.

The Teleprinter.

SPEAKING at the annual dinner of the Insurance Institute at Birmingham on Jan 22, Sir Kingsley Wood, Postmaster-General, said that the Post Office hopes to introduce in a few months' time a tele