HIS CONTRIBUTIONS

His chief publications were *Treatise on physical mineralogy* (1866–68) and *Precious stones* (1869). His chief interest was in the general problems connected with atoms and molecules and their relation to the physical characters of crystals. His hobby lay in the mechanics of crystal drawing and he undertook to prepare an Atlas of the crystalline forms of all mineral species. But the publication was discontinued before reaching letter D.

Prof. Schrauf died on November 29, 1897.

ASTRONOMICAL NOTES.

Planets during January 1938.—Mercury will be stationary on January 9 and will reach greatest elongation 24° W. on January 20. It can be seen low down in the sky near the western horizon soon after sunset. On January 29, there will be a conjunction with the moon, the planet being at the time, 3° 28′ south of the moon. Venus will be too near the Sun during the month to be easily visible.

Mars is slowly moving towards the Sun and can be seen in the western sky for some time after sunset. Jupiter is getting close to the Sun and will not be in a suitable position for observation. The planet will be in conjunction with the Sun on January 29. Saturn will be situated east of Mars and will continue to be in a convenient position for observation in the early part of the night. The rings are gradually widening the length of the minor axis being 2″·50 at the end of the month. Uranus will be crossing the meridian at about 7 p.m. and can be easily observed ; it is about 10° to the south-east of the bright star α-Arietis.

Comets.—Encke's Periodic Comet (1937 *h*) is within reach of moderate instruments. It will pass perihelion on December 25, its distance from the Sun being only $\frac{1}{3}$ of an astronomical unit (mean distance of the earth from the Sun). The comet will be situated in the constellation Ophiuchus and although it may be fairly bright at the time, it will be difficult to observe on account of the evening twilight.

The other comets discovered this year have become very faint and can be seen only with powerful telescopes.

Minor Planets.—Considerable interest is attached to the minor planet Eros on account of the fact that at certain times it approaches the earth nearer than any other superior planet. Eros was in opposition to the Sun on November 27, but its closest approach to the earth will take place in January 1938. At the end of December, it will be in the constellation Perseus and the magnitude at the time being 8·5, the asteroid will be vissible in small telescopes.

Object Reinmuth.—Information has been received of the discovery on October 28 of an interesting object of stellar apperance by Reinmuth at Heidelberg ; the hourly motion being as great as 21 minutes of arc. The object has been observed at some places since then and from the orbits computed, the mean distance from the Sun is found to be 1·8 astronomical units and eccentricity 0·66. The computations indicate that the object was nearest the earth on October 30 ; it was of magnitude 5·5 at the time but has since become very faint.

ARCHAEOLOGICAL NOTES.

Some More Pallava Temples at Kāñci. IT is a well-known fact that Kāñci or Conjeevaram was the capital of the Pallava Kings between the 3rd and the 9th centuries A.D. No other place affords greater facilities for a study of the structural monuments of the Pallavas than Kāñci. A systematic survey of about half a dozen important temples has been made by Alexander Rea in his *Pallava Architecture*. And though there are a few more temples in the same locality belonging to the same period they do not seem to have been noticed or described in any publication so far. And of these, two in particular are of especial importance. They are respectively, the Vālīśvara temple and the Iravāsthānēśvara temple.

The Vālīśvara temple is situated on the west of a tank inside the Ēkāmbarēśvara temple. This is a very pretty mono-celled shrine facing west. The basement is built of granite and the superstructure is constructed of sand-stone as in the case of the Kailāsanātha temple. An examination of the interior of the temple will at once reveal that the temple is Pallava both from the presence of the prismatic *linga* inside it with thirty-two facets, as well as from the panel behind the *linga* depicting Śiva and Pārvati seated side by side.

One point which may be considered here is the absence of the Avadaiyār for this *linga* as in the case of the *lingas* found at the Kailāsanātha as well as in the Shore

temple at Māmallāpuram both of which were built by the Pallava king Rājasimha. The size of these *lingas* also agree and remind one of the style adopted in the early Pallava period for the construction of a *linga*.

One peculiarity with regard to the panel found behind the *linga* is that it does not represent the usual Sōmaskanda motif adopted in the time of Rājasimha but, instead, we have Śiva and Parvāti seated in the same manner as in the Sōmaskanda motif but without Skanda in the middle. Śiva is seen here holding a *triśūla* in one hand and a *kapāla* in the other; Pārvati has also a *triśūla*. And the whole group is interesting iconographically.

On the outer walls of this shrine are seen some inscriptions which are unfortunately obliterated; and if an attempt is made to decipher these inscriptions some light can be thrown on the age of this temple. But judging from the architectural style and the motifs adopted in the construction of this shrine there can be no doubt that it belongs to the first quarter of the eighth century A.D.

The Iravāsthānēśvara temple is situated at Konērikkuppam in Kāñci. This is again a mono-celled shrine facing east and has a small *Ardhamaṇḍapa* in front. The body is built of granite and the tower of sand-stone. It has a square *sikhara* surmounted by four bulls one on each corner.

The *Ardhamaṇḍapa* treasures two very valuable and magnificent reliefs one on either side of its walls; and they depict Śiva as Rāvaṇānugṛahamūrti and Ūrdhvatāṇḍavamūrti respectively. Since these reliefs are fortunately not disfigured by white-wash or paint the beauty of these sculptures is seen in all its pristine glory.

Lack of any inscription in or around the temple makes precise dating difficult. But depending again on the architiectural style the prismatic *linga*, the lion pillars and the Sōmaskanda motif of this temple, it will enable one to assign it to the second half of the eighth century A.D.

Though the Vāliśvara and the Iravāsthānēśvara temples described above appear very modest in size when compared to the two great Pallava temples at Kāñci, namely, the Kailāsanātha and the Vaikuṇṭhaperumāḷ, yet they are no less inferior in value from the point of view of architectural and sculptural details.

E. Meenakshi.

Theory of Relativity.

In view of the great deal of literature that is being published recently criticising Einstein's Theory of Relativity, the following abstract from an article of Evershed (*Observatory*, No. 761, Vol. 60, Oct. 1937, p. 266) on the problem of the red-shift in the solar spectrum may be of interest to readers of this journal:—

"In the 'Proceedings of the National Academy of Sciences of India' (Vol. 6, 1936) and in the 'Indian Physico-Mathematical Journal' (Vol. 8, 1937), Dr. Sir S. M. Suleiman has propounded a new theory of light, according to which a light corpuscle consists of a binary system with components of equal mass and opposite charges, rotating round each other and travelling with the velocities of light. One consequence of this theory is that the spectral shift at the edge of the sun should be twice the Einstein value. Another makes the deflection of light of stars past the sun to be between 1·3 and 1·5 times the Einstein value. These predictions might be thought to be confirmed by my measures of the iron lines in the red, and by Freundlich's observed value of the deflection of stars near the edge of the sun. But it does not seem probable that all the lines of iron are subject to a shift which is twice the Einstein value, and we have to consider also the lines of other elements than iron. I have found from recent measures of the sodium D lines that the displacement at the limb of the sun and at the centre, and presumably over the entire disc, has precisely the Einstein value of $+0\cdot0145$ A. These lines represent a high level in the reversing layer, and are therefore not subject to the outward movement of the lower gases, but there is no excess at the limb."

"There can be little doubt that the Einstein-effect accounts for most of the shift in the solar spectrum. Were we situated on the planet Pluto, instead on the Earth where we can observe the sun in detail, we should certainly be satisfied about general relativity, for although we should get a medley of shifts in the spectrum of the star-like sun, as we do here in general sunlight, the mean of all would be close to the predicted shift, and the differences could be readily explained by radial movements of the solar gases, as shown by St. John."

"The limb effects remains, however, an unsolved problem....."