

made to germinate the seed but with only a single success. Even in this case the seedling died after a feeble endeavour at growth.

The genetic factors responsible for this occurrence of vivipary in Sorghum are under examination.

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¹ *Amer. Jour. Bot.*, 1924, 11, 7.

² *Amer. Nat.*, 1924, 58, 436.

³ *Ind. J. Agri. Sci.*, 1932, 2, 266.

On the Nature of the Papaghni-Cheyair Sequence.

IN describing the "Kadapah and Karnul formations in the Madras Presidency", King¹ believes in the existence of an unconformity between the Papaghni and the Cheyair divisions of the lower Cuddapahs. Recently however Dr. A. L. Coulson who examined these formations in connection with the occurrence of Barytes and Asbestos in this area, contends that this unconformity does not exist or "if it exists at all, is so small as to be negligible".² In all the places where King has noticed an unconformable junction, Coulson believes that the quartzites overlying the Papaghnis are *not* the Pulivendla quartzites of the Cheyairs but belong to the Banganapallis, the basal member of the very much younger Kurnool formation. While this explanation may be true in some cases, we cannot believe that it is of universal application throughout the Papaghni-Cheyair area. We have recently had opportunities of examining many localities where we see the Papaghni-Cheyair junction and have made several observations which go to support King's conclusion regarding the existence of an unconformity.

(1) In several places as for instance at Vaimpally ($14^{\circ} 25' 30'' : 78^{\circ} 14'$), Chandana ($15^{\circ} 5' : 77^{\circ} 49'$) and Balapalapalle ($15^{\circ} 27' 30'' : 78^{\circ} 6' 30''$), we see the Vaimpally shales and limestones (Papaghni) overlaid by the quartzites which are admittedly (even by Coulson) of the Pulivendla (Cheyair) sub-division. In all these places, the quartzite begins with a coarse conglomeratic facies containing, among others, pebbles of oolitic chaledony or chert. According to King "these contained fragments of oolitic siliceous chert are common to the lowest breccias and conglomerates of nearly the whole

extent of the western outcrop of the Pulivendla quartzites". These pebbles could have been derived only from the chaledonic bands with oolitic structure, which we know are exclusively confined to the Vaimpally limestones—thus showing distinctly that the latter must have started being denuded prior to the deposition of the conglomeratic quartzites. (2) Moreover the quartzites immediately above the conglomeratic zone in all the three localities show such evidences of shallow-water deposition as current-bedding, ripple-marks, etc., and could not have been deposited at depths of more than 8-10 feet—thus indicating the proximity of the shore line. (3) If according to Coulson the Papaghni-Cheyair sequence were unbroken, one would have expected to see a gradual grading of sediments from the Vaimpally shales or limestones to the pure quartzites above. We are not aware of any such occurrence—the transition from the lower to the upper series being always abrupt and well defined. (4) Another evidence pointing to the existence of a Papaghni-Cheyair unconformity is seen near Donakonda (2 miles east of Nayanapalli). Here we see the shales and limestones of the Vaimpally sub-division have a strike 20° west of north and dip 10° east, while the overlying Pulivendla quartzites strike 45° west of north and dip 20° east—distinctly suggesting an angular unconformity.³ (5) From our study of the trap rocks seen between the Papaghnis and the Cheyairs near Talapalli (5 miles west of Vaimpally) we have reasons⁴ to believe that this trap flow is "sub-aerial" and not "sub-marine". The sub-aerial character of this lava flow which overlies the Vaimpallys and underlies the Pulivendlas must naturally lead one to infer an unconformity between the two divisions.

From what has been said above, it appears to us that the unconformity between the Papaghnis and the Cheyairs is not so 'negligible' as Coulson suggests.

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¹ *Mem. G.S.I.*, 8, pt. 1.

² *Mem. G.S.I.*, 64, pt. 1, pp. 3 & 6.

³ *Geologic Structures*, B. & R. Willis, p. 44.

⁴ These will be discussed in a separate paper on the trap rocks of the lower Cuddapahs to be published shortly.