



Fig. 2.

Current bedded quartzite pebble from Talya conglomerate.

conglomerates and underlying them. In this area it was clear that such pebbles were derived from the breaking down of the pre-existing older current bedded quartzites. It is probable that there are different series of current bedded quartzites in the Dharwars and those older than the conglomerates have evidently formed the source of the current bedded pebbles.

The classification and correlation of the quartzites, conglomerates and the other constituents of Dharwars will be dealt with fully in due course in the publications of the Mysore Geological Department. But for the present it would suffice to lay stress on the fact that the finding of the current bedded pebbles in the conglomerates forms one more proof in support of the sedimentary origin of some of the Dharwar conglomerates. There does not

seem to be any other recorded instance from other parts of India, wherein such current bedded pebbles have been noticed in the Dharwar conglomerates.

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Sorghum halepense and *Sorghum sudanense*—A New Difference.

Sorghum halepense (Linn.) Pers. (Johnson grass) is a perennial with rhizomes and with the chromosome number $2n = 40$. *Sorghum sudanense* Stapf. (Sudan grass) is an annual with the chromosome number $2n = 20$.¹ In Johnson grass the spikelets are small $4 \times 2 \times 1$ mm. and break through callus at suture.² Sudan grass has bigger spikelets 5 to 7×2 to $2.5 \times 1.25 \times 2$ mm. and breaks with bits of rachis attached. These characteristics have so far served to separate these two grasses allied to sorghum, the great millet.

The anthesis of cultivated sorghum at Coimbatore has been recorded³ in great detail. It is found that the period of intensive anthesis is just past midnight and then the anthesis slows down and continues in a weak measure till the morning.

Observations on the anthesis of Johnson and Sudan grasses at Coimbatore show that the period of their anthesis is very short, less than an hour. Sudan grass finishes its flowering before sunrise, usually between 5-30 and 6 A.M. but Johnson grass flowers only after sunrise, between 8-30 and 9-30 A.M. This habit of flowering, well after sunrise has helped in spotting out mixtures of Johnson grass among Sudan grass.

It is interesting to note that the flowering period of Johnson grass (8-30 to 9-30 A.M.) is also the flowering period of the three wild sorghums, viz., *S. versicolor*, J. N. Anders, *S. purpureo-sericeum* Aschers. et Schiweinl., and *S. dimidiatum* Stapf. all belonging to the section *Para-sorghum*⁴ (chromosome number $2n = 10$).

The crisp period of anthesis and the day-flowering habit of Johnson grass and of the *Para-sorghums* stand out in contrast to the pre-day flowering of Sudan grass and the night flowering of the cultivated sorghums.

Sudan grass crosses readily with cultivated sorghums. Both have their chromosome number $2n = 20$. Both flower predominantly before sunrise. Sudan grass has thus affinities to cultivated sorghums in anthesis also. How far domestication in arid regions has brought about this pre-day flowering and how much further selection for compactness in the head has pushed the anthesis to very near midnight raises interesting problems which can be solved only after intensive observations on a wide range of sorghum material.

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¹ *Jour. Agric. Res.*, 1932, **44**, 317-21.

² *California Agric. Dept. Farmers' Bull.*, 1917, **126**.

³ *Indian Jour. Agric. Sci.*, 1931, **1**, 445-454.

⁴ Snowden, *The Cultivated Races of Sorghum*, 1936.

The Kashmir and Rajputana Lac Insect.

E. J. PARRY'S Book on Shellac (Pitman, 1935), which came only recently into my hands, gives an excellent review of the work done at the Lac Research Institute, Ranchi, India, ignoring, unfortunately similar work done at the Indian Institute of Science, Bangalore, initiated by Prof. G. J. Fowler long before the foundation of the Ranchi Institute. Parry quotes and endorses a criticism of my views by Howlett, believing it impossible for the lac insect to feed on gums. This probability was long ago confirmed by a study of the symbiotic fungus from lac by Srinivasaya and myself¹ while a reply to Howlett's other criticisms has recently appeared in the *Zeit. f. ang. Entom.* (July 1936, **23**). The Report on Lac² which contains only scathing references to my work further ignores that it was I who had sent brood lac to Howlett confirming a statement that there is a distinct species of lac insect in Mysore with three life-cycles a year.³

I still maintain that there are some half-a-dozen lac insects in India one of

which is *Lakshadia fici*, described by Green. I recognised the existence of this species⁴ while Chamberlin's Monograph,⁵ appearing shortly afterwards, independently acknowledged the same. The lac insect of Kashmir growing there on *Acacia catechu*, was first identified by me as *Lakshadia fici* and appears to be the only statement to this effect,⁶ while the numerous publications from Pusa and from Ranchi, to which alone Parry has referred, do not inform him of the specific nature of the Kashmir lac insect.

No writer on lac has so far mentioned that it was Lt.-Col. Adams⁷ who says for the first time "Some (larvæ) are brilliant red, while others were yellow". I identified the Rajputana insect also as *Lakshadia fici*, whereas, Negi, of the Ranchi Institute, who even illustrates this insect⁸ completely ignores its specific identity.

The following questions now press for solution. Is the insect named *L. fici* so rare that no one has been able to come across it again, it being particularly remembered that lac insects may be had in pounds if not even in hundredweights? Is the insect in Kashmir and Rajputana identical with each other and is it only a variety of the other lac insect commonly found in India so that a specific designation as given by Green is not justifiable? On the contrary if *L. fici* represents a distinct species then there are other insects, e.g., *Lakshadia mysorensis*, likewise distinct, which require similar scientific designations.

Finally, I may add that in the article on Nomenclature of Lac Insects,⁹ I have explained how the generic name *Lakshadia* has claims of priority over *Laccifer*.

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¹ *J. Ind. Inst. Sci.*, 1929, **12A**, Pt. 6.

² *Ind. Forest Rec.*, 1921, **8**, Pt. 1.

³ *Curr. Sci.*, 1934, **3**, 60.

⁴ *J. Sci. Assoc. Vizianagaram*, 1923, **1**.

⁵ *Bull. Ent. Res.*, 1923, **14**.

⁶ *J. Sci. Assoc. Vizianagaram*, 1925, **2**, 65.

⁷ *The Western Rajputana States*, London, 1899, with a Chapter on Lac.

⁸ *Bull. Ent. Res.*, 1929, **19**, Pt. 4, Pl. 16.

⁹ *Curr. Sci.*, 1935, **3**, 365.