hysteresis such as permanence, reproducibility, drift and disappearance have been amply elaborated in the earlier publications. In the light of the cavity theory, interpretation of the characteristic changes shown by Difco Gelatin leads to interesting conclusions.

During sorption the filling of cavities is progressive and proceeds from the neck to the body of the cavity. Whereas during desorption emptying of the cavity is sudden and abrupt. The cavity gets emptied when the neck is emptied. The slight shift of the sorption curve and the decrease in total sorptive capacity indicate that the cavities have decreased in size. The shift of the part of desorption curve in low pressure region and consequent widening of the hysteresis loop indicate that the entrapping effect of the cavities has increased.

The difference between the body radius and neck radius of cavity is a measure of the volume of liquid entrapped. The entrapped volume increases as this difference increases. At the end of each sorption, gelatin swells with the water taken up at saturation pressure. During desorption, gelatin shrinks and the cavities collapse in stages. The decrease in the total sorptive capacity and increase in the entrapping effect in the low vapour pressure region suggest that the cavity necks are more constricted than the body of the cavity. Why the necks are more constricted than the body is still an open question. In a swelling system in a solvating liquid, the entry of the liquid into the interior is a slow process. The hydration and swelling may not be uniform. During desorption, the swollen sorbent shrinks. Swelling and shrinkage, if non-uniform, result in localised stresses and strains and these affect the extent of collapse of the cavities and their necks.

The nature of the changes observed in Difco Gelatin in the 12th cycle of sorption and desorption is a particular stage in the continuous process. The study lasted over 8 months. If further sorptions and desorptions of water on the gelation were continued, the cavities and their necks would further shrink and finally collapse and the hysteresis loop would disappear.

Unlike many other swelling sorbents which have been studied, Difco Gelatin has behaved in a unique way. The changes have been explained satisfactorily in the light of the cavity concept in conjunction with the hydration and swelling of gelatin. The treatment however is qualitative. No other theory of hysteresis advanced so far can account for all the changes shown by Difco Gelatin.

In an earlier investigation,[3] gelatin of Merck Gold Label quality has shown no hysteresis effect at all in the first two cycles of sorption and desorption whereas Difco gelatin has behaved differently. This raises the possibility of varietal difference in gelatin influencing sorption-desorption hysteresis. The problem is being investigated.

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FOSSIL ANGIOSPERMIC REMAINS FROM NEAR TYAJAMPUDI IN THE WEST GODAVARI DISTRICT OF ANDHRA PRADESH

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THE present communication records the occurrence of fossil angiospermic remains collected recently (March, 1967) from a new fossiliferous locality, 1½ miles east of Tyajampudi (81° 31′ 30″ : 16° 58′ 30″, topo-sheet No. 65H/9) in the West Godavari District of Andhra Pradesh. The fossils, preserved almost exclusively as impressions or compressions, are found in khakhi or brownish coloured hard, compact and well-laminated shales. The shale bed only a few feet thick, overlies a pebble bed and both these are associated with the Rajahmundry sandstones which constitute the prominent geological formation all around the area. The sandstones themselves overlie the igneous Deccan traps.

FIGS. 1–7. Fig. 1. *Phyllites* Sp. 1. Figs. 2–4. *Phyllites* Sp. 2. Fig. 5. *Phyllites* Sp. 3. Fig. 6. *Phyllites* Sp. 4. Fig. 7. Seed-like organ. (Figs. 1–5, × 1; Figs. 6–7, × 2.)

As a rule, the fossils are fragmentary and one has to break a number of shales along their bedding planes before coming across a tolerably complete leaf impression. None of the compressions found show any traces of carbonaceous films, hence it could not be possible to recover their cuticles.

The following is the description of some of the fairly preserved fossils. Pending a detailed investigation of the fossil flora, no serious attempt is made in the present article to comment upon the exact botanical affinities of these fossils. Accordingly all the leaf impressions have been included under the non-commital form genus *Phyllites.*

Phyllites *Sp. 1* (*Fig. 1*).—The specimen shows two nearly compltee leaf impressions. Both these leaves are similar and probably belonged to the same plant. They might as well represent the leaflets of a compound leaf (?). Leaves seem to be elliptical, sessile or with short, inconspicuous petiole, margin entire, venation pinnately reticulate with a clear midrib and fairly distinct lateral veins, the latter set about 2 mm. apart and almost reaching margin. Clear network seen in between lateral veins. Size of preserved part 3-3·5 × 1·5 cm.

Of these two leaves one seems to be preserved on its lower and the other on its upper facet.

Phyllites *Sp. 2* (*Figs. 2-4*).—The leaves in Figs. 2, 3 and 4 are all similar in their characters and probably belonged to the same plant. Of these, the leaves shown in Figs. 2 and 3 are nearly complete specimens while the one in Fig. 4 (lower one) is very much incomplete. The description given is based mostly on the former.

Leaves fairly large about 6·5 × 3 cm. or even larger, probably petiolate (?), margin entire but not uniformly preserved. The margin and lamina give an indication that these might have been fungal infected prior to fossilization. Shape oval, venation pinnately reticulate with a prominent midrib. Primary lateral veins sub-opposite, given off at an angle of 30–40° almost reaching margin and set 4–7 mm. apart; secondary veins arise almost at right angles from primary ones. Clear reticulum of veinlets in bteween secondary veins.

Figures 2 and 3 also show a small stem impression each, by the side of the leaf impression. In both the cases the stem pieces are longitudinally ribbed owing to ridges and furrows. No nodal region, however, is seen.

Phyllites *Sp. 3* (*Fig. 5*).—The specimen shows a single leaf preserved almost completely.

Leaf sessile or with an extremely short petiole (?), 4·5 × 1·5 cm., ovate with a broad base and gradually tapering apex. Margin entire, tip acute, venation pinnate, midrib distinct, lateral veins poorly preserved.

Phyllites *Sp. 4* (*Fig. 6*).—The specimen shows a small leaflet, completely preserved. Leaf 2·5 × 1 cm., elliptical, almost sessile or with a very short petiole, margin entire, tip acute, venation pinnately reticulate. Midrib very prominent being considerably thick, lateral veins fine 1·5 mm. apart not quite reaching margin.

This may probably represent the leaflet of a compound leaf of Leguminosæ.

Figure 7.—The specimen is a compression of a more or less oval, probably flat seed-like organ 0·8 × 0·5 cm. Wall considerably thick and homogeneous. Inside the wall is a raised cushion-like part, at one end of which (upper end in the photo) can be seen a small but conspicuous broadly triangular depression. The cushion-like part and the prominent depression, might represent the remnants of the embryo, the former probably constituting the cotyledonary zone.

These fossils can be attributed to the dicotyledonous members of angiosperms, and they provide unequivocal palæobotanical evidence for the Tertiary age of the Rajahmundry sandstone formation.

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