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2. Kernels, cake and oil of *Thevetia neriifolia* Juss. possess toxicity in varying degree ; of these the kernels are the most toxic.

3. Addition of soap equal in quantity to that of the kernels used is necessary to secure the maximum effect.

4. Aqueous extracts of the kernel are found, in some cases, to confer immunity from attack by insects for short periods to plants sprayed with them.

5. *Thevetia* oil is found to act as a deterrent against termite attack.

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Paper Making as a Cottage Industry.

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Farm Management Course.

The History of paper. In olden days, our anscestors used to write their records and invitations on the leaves of palms like palmyra. As days passed on, the Chinese were the first to prepare paper in cottages. Then as we were trading with them some of our people learnt the art from them, but they kept it a secret. After the invasion of the Mahomedans, it was taken to their country, and thus the industry spread over the whole of Europe, but it almost perished in India. Then after centuries, the industry was again brought to India and began flourishing well. But as a result of the industrial revolution the mills came into existence, thereby adversely affecting the cottage Industry.

Now again, the industry is being popularised. The All India Village Industries Association is doing its best for the revival of many cottage industries, including that of paper.

Raw materials used in paper making. All fibrous plant material are used in paper making. They can be divided into two main divisions. Soft materials like the rice straw, plantain leaf sheath, waste paper, etc., and hard materials like the jute, sunnhemp, rags, bamboo, etc.

Processes involved in paper making. The raw material has to undergo the following treatments before it is actually made into paper.

Sorting and dusting. Every raw material has to be sorted well and dusted, so that it may be free from foreign matters.

Cutting. The raw material is then cut into small and uniform pieces so that it may be easier to handle them in the several processes of pulp making.

Boiling. The material is then boiled with a small percentage of caustic soda, which greatly helps in the separation of the fibre except in the case of waste paper which is merely soaked in water with a small percentage of caustic soda and allowed to remain soaked for two days.

Washing. Then, the material is given a washing, so as to remove the caustic soda present in it, so that it may not hurt the worker who handles it. This is done by putting the material in a thick cloth and allowing the water to pass through it freely, thereby washing off the caustic soda.

Trampling. After this, the soft materials are put in a hemispherical pit and trampled under foot. This is to continue until the fibres are separated fully well.

Beating. The hard materials are beaten under a simple arrangement called the *Dhenki*. This is based on the pestle and mortar method. This requires two workers, one for operating the *Dhenki* under his feet, and the other for feeding it with the material.

Now the fibres are completely free and the pulp is ready. This pulp is washed again. In some cases, the material requires a second boiling and beating.

Bleaching. Then the pulp is bleached. The pulp is put in a small tube half filled with water and a small percentage of bleaching powder added to it and left undisturbed for about 12 to 15 hours. It is washed again so that it may be free from the alkali present in it.

Lifting and drying. Then the pulp is transferred to a vat, the top of which is bigger than the bottom in perimeter, and filled with water. The pulp is stirred well so that the fibres are free in water. The implements required in the lifting process are, a mat prepared from a kind of grass and horse hair and wooden frame on which the mat is spread. The frame along with the mat is dipped into the vat and lifted up horizontally, thereby forming a thin layer of pulp on the mat. The water is drained off through the space between the grasses of the mat. This thin layer is then transferred to a napkin and kept on the table. Many such napkins are kept one over the other and then pressed with a plank so that the water in them may be completely squeezed out. The napkins are then pasted to the wall the paper coming in between the wall and the napkin. After it is well dried, the napkin and the paper are removed from the wall. Now the paper is ready but as it is, it is only a blotting paper absorbing moisture. So it has to be sized.

Sizing. A paste of rice folour is prepared with the addition of some alum. This is used as the sizing material. This is applied on both sides of the paper and dried. This paste, not only acts as a sizing material, but also strengthens the paper.

Glazing. Last of all, the paper is glazed. This is done by any smooth stone. The glazing gives a very nice finish to the paper.

Now the paper is ready for the market. This industry can easily be organised in a village, with an initial capital of Rs. 150 to Rs. 200.

Advantages of using hand made paper. They are stronger than the mill made paper. By using hand made paper, we get a good market for the raw products produced in our villages. We feed many of our own villagers by using the paper prepared by them.

ABSTRACTS

Experiments on flue-cured tobacco. E. M. Mathews and T. B. Hutcheson (*Virginia Sta. Bul.* 329; 1941).

Flue-cured tobacco thrives on well drained soils of structure and texture which provide good aeration and facilitate ease of cultivation, e. g., Durham, Granville, Norfolk, Appling, and deep phase Cecil sandy loams soils with yellow or light red subsoils with sufficient slope to drain quickly after rains. Rotations favourable to the production of high quality leaf should supply a considerable quantity of organic matter to the soil from nonlegumes but omit legumes. Some good type rotations are tobacco, small grains, and grass hay or weeds: tobacco and small grains followed by rye to be turned under; and tobacco continuously with rye as a winter cover crop to be turned under before tobacco.

Varieties of flue cured tobacco found best are tall growing kinds adapted to harvesting by the priming method, as Yellow Mammoth, White Stem Orinoco, Yellow Pryor, Virginia Bright and Gold Dollar. Plant beds should be 6 ft. wide and of any desired length, steam sterilized or burned, and fertilized with 4—8—3 or similar fertilizer at rates of from 1 to 3 lb. per square yard. For the production of high quality cigarette tobacco plant should be spaced from 20 to 24 in. apart in 4 ft. rows and should be topped to leave from 14 to 20 leaves per plant. Except where a high percentage of plug wrappers is desired. best results have been obtained by pulling leaves as they ripen rather than by harvesting by cutting the plant. The use of oil burners for curing flue cured tobacco has been somewhat more expensive than curing with wood under average Virginia conditions, but temperature may be controlled more easily.

On good tobacco soils under average conditions a fertilizer analyzing N 3 per cent, phosphoric acid 10, and potash 6, at the rate of 1,000 lb. per acre is indicated for satisfactory results. The rate may be lowered to 800 lb. per acre on heavier types of soils or the N percentage reduced. The studies of the nutrient carriers suggest that in compounding tobacco fertilizers, from one-fourth to one-third of the N should be derived from organics, one-third from nitrates and the remainder from standard inorganic sources, the P from superphosphates or other readily available salts and the K from readily available K salts in such proportions as to carry about 2 per cent of chlorine. Fertilizers should not be applied to come in direct contact with the plant roots. This may be accomplished by using a machine designed to place the fertilizer in bands on each side of the row, illustrated by tests in cooperation with F. H. Bateman or by running a wide single-shovel plow through the fertilizer drilled in the row before listing or bedding the land. N or K in addition to that recommended for use at planting, if needed, should be applied as side dressings at the first or second cultivation. [*Exp. Sta. Rec.* 85, 616, November, 1941].

Zebu (Brahman) cross cattle and their possibilities in North Australia : Co-operative investigations in Queensland, R, B. Kelley (*Austral. Council Sci. and Indus. Res.*