

No marihuana: plenty of hemp

French farmers are doing well out of the growing market for hemp fibres. British farmers could face 14 years in jail if they followed suit



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pandering to the pot culture. Anxious to confirm the fact at first hand, we hopped on the early morning train out of Paris's Gare Montparnasse, and two hours later were met in Le Mans by the research officer of the FNPC. It was early in September, just as the harvest was getting into full swing. With a justified pride in his achievement, our contact showed us out to the experimental fields, where acre upon acre of the French type of monoecious hemp (with male and female flowers on the same plant) vied with the trial introductions of five-metre dioecious plants (only one sex per plant) from Italy, and thick-set Lebanese bushes of the kind normally used for producing hashish. Apart from these latter plants—a mere dozen or so, grown exclusively for “comparative purposes”—we were assured that the rest of the crop had been subject to selective breeding which reduced the levels of THC—the psychoactive ingredient of cannabis—to virtual insignificance. On collecting a few “female flowering tops” and smoking them in Paris later that same evening, we were forced to concede the truth: French hemp is useless as a drug plant, and the smoking of even large quantities of it succeeded only in giving us a mild but irritating headache. . . .

Hemp's history of service to human culture is as long as it is diverse. The Neolithic “Yang Shao” culture of China (4000 BC) is believed to have used the long fibrous strands on the outside of the cannabis stalk for rope and cloth. According to Professor Hui-Lin Li, an economic botanist at the University of Pennsylvania, cannabis seeds, rich in pro-

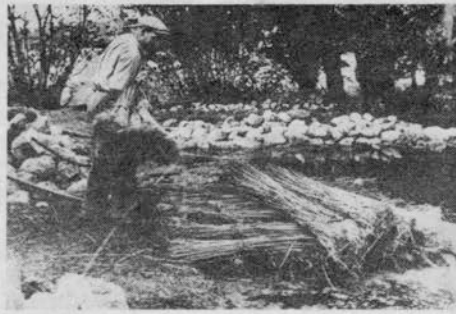
tein, “were considered, along with millet, rice, barley and soybean, as one of the major grains of ancient China”. The first paper was made of hempen rags, while the earliest pharmacopoeia in existence, the *Pen-ts'ao-Ching*, states that “the fruits of hemp . . . if taken in excess will produce hallucinations [literally *seeing devils*]. If taken over a long term, it makes one communicate with spirits and lightens one's body.” Writing in the 5th century BC, the Greek historian Herodotus describes how the Scythians would purge themselves after funerals by inhaling the smoke of hemp seeds thrown onto hot stones. “The Scythians enjoy it so much that they howl with pleasure. . . .” Linguistic evidence indicates that in the original Hebrew and Aramaic texts of the *Old Testament* the “holy anointing oil” which God directed Moses to make (*Exodus 30:23*) was composed of myrrh, cinnamon, cannabis and cassia.

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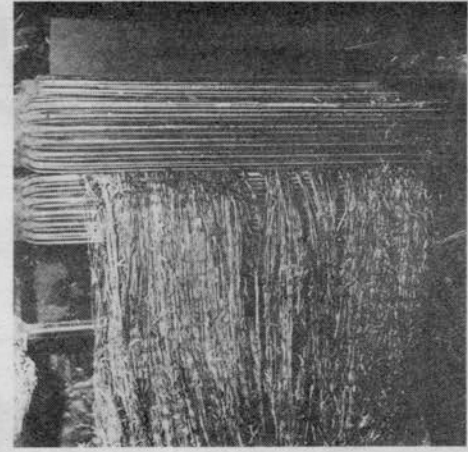
Precious plants

Up to the middle of the last century France alone was cultivating more than 100 000 hectares, whilst so precious was the plant in Tudor England that Queen Elizabeth I exacted a bounty of 5 gold sovereigns on any farmer who did not cultivate it. The reason for such a penalty was simple: hemp fibre is the strongest vegetable fibre known to man, and can be grown easily and in a single six-month cycle from April to September. Before the introduction of tropical sisals and Manila hemp, it was essential for the rope and canvas (the very word derived from cannabis, according to the *OED*) used to outfit the Navy. An American commentary on the 1764 Hemp Law governing importation from “His Majesty's colonies into Great Britain” notes the necessity to “render their mother country independent of certain northern powers (mainly the Baltic States) upon whom her former dependence, for a supply of naval stores, has been frequently very precarious”.

This strategic aspect of cannabis as a basic fibre source reappeared for a short while during the Second World War.



Production of high-quality hemp needs a lot of labour. The stalks are first dried in the field; then "retted" in water; and then dried again for "scutching and heckling"



In the wake of Pearl Harbour and the Japanese invasion of the Philippines, the US was cut off from its supplies of Manila rope and twine, and made considerable efforts to revive its by then sagging hemp trade. Planters' manuals were rapidly reprinted, and the estimated area under cultivation increased from 585 hectares in 1939 to 59 500 hectares in 1943. By 1946 the total had dropped back to 1950 hectares and the industry was on its way to extinction in the industrial West.

A number of factors combined to bring about this state of affairs. The production of high-quality hemp fibre is a labour-intensive business. The hemp stalks must be dried in the field, then transported to a "retting pit" where they are left in water for several days to start the process of separating the fibre from the woody core (known as hurds) of the stalk. The retted plants are then taken back to the farm to be dried out in buildings similar to hop oast houses. The stalks are passed through what is essentially a large mangle separating fibre from broken hurd. The hurds are then shaken out, and after "scutching and heckling" (a process of cleaning and separating individual strands) the long, strong fibres are ready for spinning and weaving. In a pre-industrial society, the bulk of this work could be carried out during the winter when farmers had little to do. With the importation of cheap tropical fibres and the demise of the sail, however, such labour-intensive work no longer proved financially viable. A mechanical hemp "breaker" was introduced in the early 1900s, but it had arrived too late to save a trade which by then was having to cope with international cannabis prohibition and a new image for the plant, from essential crop to assassin of youth.

Synthetic textiles also helped hasten hemp's decline, as so, too, did the 19th century introduction of the chemical woodpulp process. As already mentioned, hemp textiles were one essential source for rag paper. After the Second World War, for instance, Robert Fletcher and Sons, the paper manufacturer owned by the Imperial Tobacco Group, bought up large stocks of Nazi concentration camp uniforms made from hemp, which it converted into paper. Since then, Fletchers has stopped using textiles for paper because it is almost impossible to obtain them free of synthetic materials which wreak havoc on the machinery. It now imports raw hemp fibres from France.

For, curiously enough, as wood-pulp paper replaced rag paper and hemp textile products disappeared from the market, a new process was being developed in France that used the raw hemp fibres for the production of high-quality, strong papers. The fibre is extremely resilient and ideal for the manufacture of cigarette paper, which must combine high tensile strength with extreme lightness. Fibre for paper is cheaper to produce than fibre for textiles, because it needs neither to be as long nor of such high quality. Paralleling the growth in the consumption of illicit,

high-THC forms of cannabis, the new hemp cigarette paper industry was launched in the early 1960s in France, and established its present prominence in the halcyon years between 1967 and 1971. Statistics show a decline in the area of French cannabis sown for textiles from 1084 hectares in 1961 to 147 hectares in 1968, the last year for which official records of this type of cultivation exist. In contrast, areas dedicated to paper production increased from 61 hectares in 1961 to 3181 hectares in 1968, peaking at 10 595 hectares in 1977.

The growth of this new market for the plant in France was accompanied by a radical restructuring of the economics of the hemp business. Though a few farmers grow the crop principally for the sake of the subsidies they receive (1405 francs per hectare last year), the bulk of current production comes from mechanised concerns with high levels of productivity. One of the great advantages of hemp for farmers lies in its use as a rotation crop, breaking up the soil with its deep root system and also eliminating weeds, thus leaving the land ready for the direct sowing of a winter wheat crop before the arrival of the first frosts. An enthusiastic response to this potential has brought about the large-scale introduction of hemp into areas where it was not traditionally cultivated, and in Bar-sur-Aube, for instance, 200 km south-east of Paris, a flourishing cooperative has been established to represent the interests of part of the new hemp agribusiness. There, 93 farmers helped finance their own breaking mill which in 1978 was processing 2500 hectares of hemp.

Streamlined mechanisation

A certain amount of trade secrecy surrounds the exact mechanical processes involved in "breaking" the dried hemp stalks and separating bast fibre—the phloem fibres, most suitable for paper production—from the woody hurds. The director of the Bar-sur-Aube cooperative politely refused us saying that as he sold 20 per cent of his product to England, he did not wish to encourage "English competition". The De Mauduit mill likewise refused to receive us, even though the FNPC intervened on our behalf.

Their reticence is understandable. It is streamlined mechanisation in the breaking mills which has made the production of crude bast fibre for paper much more cost-effective when undertaken on a large industrial scale. Not surprisingly this new system has led to an ever-increasing centralisation of the hemp business. Various small mills were involved in the early 1960s, but in the past decade the field has narrowed to two major concerns, besides the Bar-sur-Aube cooperative. One is the relatively traditional Job cigarette paper company in Toulouse, and the other the giant De Mauduit factory in Quimperlé, which has prevailed over all its competitors in the main hemp-growing areas of central and north-eastern France. Its aggressive business acumen—De Mauduit is actually a subsidiary of

the US paper multinational Kimberly Clark who makes Kleenex tissues—is based upon a fine understanding of the profitability of the trade: French farmers receive 435 francs per tonne for the dried hemp stalks and De Mauduit charges 2500 francs for the prepared bast paper fibre, for which the British paper maker ends up paying £650 per tonne. De Mauduit's treated paper fibre, hemp pulp board, costs an astonishing 6500 francs per tonne.

Since the break mills have a virtual monopoly, the FNPC in Le Mans is looking for ways of diversifying the market for the hemp its members produce. Research is being undertaken into the possibility of including a proportion of hemp in various coarser grades of paper, including wrapping paper, as a means of increasing strength. Some printing paper manufacturers, including the company that produces the glossy pages of *Paris Match*, are considering introducing a proportion of hemp into their paper pulp. So far the only indication that British companies other than Robert Fletcher and Sons are actively researching hemp's paper potential comes from the Manchester University's Department of Paper Science, which refused to divulge information on recent work in this area because what information it had was a "trade secret".

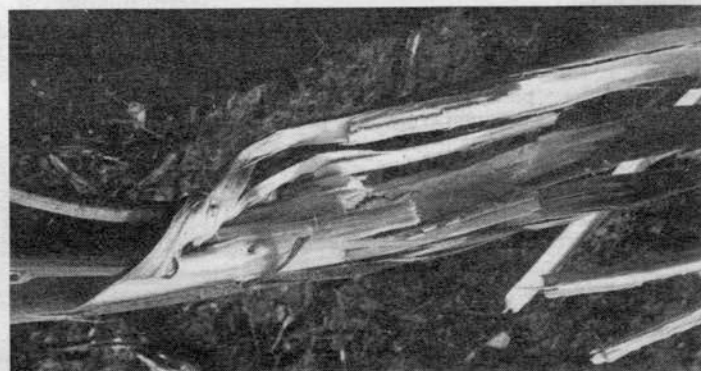
Further potential for hemp in paper manufacture involves utilising the plant's woody core, the hurds. While the average fibre yield per hectare is approximately 185 kg, fully two-and-a-half tonnes of hurds are produced from the same area. These are now being sold for animal bedding and for producing building boards with good sound-proofing properties. As far back as 1916, however, the US Department of Agriculture carried out a number of semi-commercial tests on the use of hurds for paper production and concluded: "After several trials, under conditions of treatment and manufacture which are regarded as favourable in comparison with those used with wood pulp, paper was produced which received very favourable comment both from investigators and from the trade and which according to official tests would be classed as No. 1 machine finish printing paper." Not only could hemp hurds compete with wood pulp on cost and quality, but they were also found to be far more economical in terms of land use. "Every tract of 10 000 acres which is devoted to hemp raising year by year is equivalent to a sustained pulp-producing capacity of 40 500 acres of average pulp-wood lands." Despite a 1977 Italian study which found that this usage remained commercially viable, paper companies are apparently disregarding the potential for hurds, even though paper production from hurds is much less polluting than from wood-pulp. Hemp hurds contain on average 4 per cent lignin, as opposed to 18-30 per cent in wood, and it is the effluent resulting from washing out the lignin that causes the most serious pollution in the chemical pulping process.

Some thought is now going into researching non-paper applications for hemp products. At present seeds (farmers receive 10 francs per kg; average yield is 50 kg/ha) have a limited use, being sold mainly as animal feed, bird food and anglers' bait. However, cannabis seeds contain 30-45 per cent high protein oil, which is edible, or may be used in future in paint production.

The French hemp industry is of course entirely disregarding cannabis' textile potential, despite the fact that in Brittany some small farmers still produce hempen sheets and other hard-wearing cloth for their own use. We were informed in France that the production of the high quality fibres required for textiles remains prohibitively costly and that rope and sacking are imported from Eastern Bloc countries where labour costs remain lower. Scottish hemp fibre importers obtain a large percentage of their material from Poland. According to our research, the finest hemp cloth has always been produced by the Chinese and Italians,

and Yugoslavia, India and Japan are still producing hemp textiles, the latter in combination with synthetic fibres.

What might be the future for a revitalised hemp fibre industry in the UK? Certainly, the British paper-makers could not but welcome any attempt to undercut prices they pay for imported hemp, but in order to achieve this, considerable capital must be invested in British breaking mills. However, what is possible of more interest than the now established use of fibre for high-quality paper is the future of hemp fibre in textiles. Given careful preparation, high-quality hemp cloth can be produced in Britain that is both comfortable and more durable than any other natural textile. A hemp/wool mix was once widely used in France, being known generically as *berlinge*. Demand is growing for durable natural fibre products where the public will pay a somewhat higher price for a superior product. Certain clothing manufacturers in the US have expressed an



Tim Malvon

"Now this hemp is the finest fibre known to mankind, my God, if you ever have a shirt made out of it, your grandchildren would never wear it out. You take Polish families. We used to see marijuana in the yards of Polish families. We'd go in and start to tear it up and the man came out with his shotgun, yelling: 'These are my clothes for next winter.'" Harry J. Anslinger, former Commissioner, US Federal Bureau of Narcotics.

interest in hemp jeans (Levi Strauss's original jeans were made from hempen sailcloth), while the outdoor equipment industry is also returning where possible to natural fibres, and hemp might be ideal in, for instance, specialist mountaineering backpacks. Given the mess in which the British textile industry finds itself, such innovative ideas could well bear fruit, particularly if the technology can be developed from the existing machinery in the linen industry to keep the cost of preparing weaving quality hemp fibre within reasonable limits.

All this, of course, presumes a more sensible government attitude to British cultivation laws. (Cannabis stalks and seeds are already legal, and can be safely imported.) While international law governing cannabis cultivation makes a specific exemption for industrial uses, no such exemption exists in British law, and growers must obtain a special licence from the Home Secretary. The only farmer to apply for such a licence in 1980 was refused. In France, the law is more flexible, but no less precise. Farmers must have a guaranteed purchaser of their crop and must obtain their official, low-THC seed directly from the FNPC, informing the Ministries of Health and Agriculture of their intentions. Such a model could easily be introduced into this country in conformity with the Common Agricultural Policy. Since the rapid expansion of the French industry furnishes proof of profit potential, British farmers might be justifiably annoyed at being threatened with a 14 year jail sentence for growing a plant, generously subsidised by the EEC on the continent, from which their French neighbours are making good money. Or perhaps Her Majesty's government should sue the EEC commissioners for conspiring to aid and abet a criminal offence? □