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A Review of
the Naval Stores Industry

EUGENE F. GRENEKER

SOME waggish character once said that only a drinking man could buy gum turpentine. What this wit meant was this; prior to 1939 if you desired some turpentine for household uses or small paint jobs, you had to scramble around in the backyard for a container, nine out of every ten times an empty quart bottle of either Bourbon or Scotch. With this you went to the hardware store and obtained your turpentine, your merchant drawing it out of a barrel, which chances are, you didn't see. He had it in the back of the store. Now he wasn't ashamed of it nor was he pulling anything over on you. That's the way one of Georgia's oldest agricultural products was marketed.

Gum turpentine farmers of Georgia refer to that method as the "cracker barrel" way of merchandising or the way "grandaddy did it".

But today if you want turpentine for that household use, you can find it in attractive containers and in convenient sizes. Gum turpentine today is on the shelves and counters of hardware, drug, grocery, paint and many other stores and retail outlets.

What brought this change in one of the world's oldest forest enterprises? The gum farmers themselves.

The AT-FA Cooperative

In the depressed '30's they formed an organization . . . The American Turpentine Farmers Association Cooperative which has its general offices in Valdosta, Georgia, the Gum Turpentine Capitol of the World. In addition to the AT-FA, Valdosta is the home of three modern naval stores distillation plants, two chemical companies, which use a large amount of gum rosin, a gum turpentine bottling plant, storage yards and tanks.

It must be explained here that the American Turpentine Farmers Association is not by any means a Georgia organization, for gum naval stores, turpentine and rosin are produced in Florida, South Carolina, Alabama, Mississippi and a negligible amount in Louisiana.

Georgia, however, is the largest producer. Writing in a recent Georgia Extension Service Bulletin entitled "Working Trees for Naval Stores", A. R. Shirley, Cooperative Agent-Naval Stores, (now State Forester), Georgia Agricultural Extension Service of Agricultural and Industrial Chemistry, states: "Georgia has led

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in naval stores production for 17 years. Since 1940 Georgia has produced more than 60 per cent of the nation's naval stores. Of the total world supply, Georgia accounts for about one-third."

Mr. Shirley also reveals that "the naval stores industry represents an annual income to Georgia varying from a low of $7,500,000 in 1932 to as much as $23,500,000 in 1945. It employs, on the average, about 20,000 to 25,000 people per year who work approximately 40 million longleaf and slash pine faces per year."

How the turpentine farmers put across their gum turpentine into these new outlets was by advertising.

The Association since its beginning in 1936 has been headed by Judge Harley Langdale, a very prominent Georgian and the world's largest turpentine farmers. It is supported by dues paid by the members, some small producers, some large ones.

A portion of these dues is earmarked for advertising, the AT-FA employing an agency in Atlanta to handle its account. Leading magazines in the big circulation realms carry the message. From the beginning, almost immediately results could be noted. Prices began to climb from the deflated ones in the '30's. Demands started pouring in. Ask any turpentine producer if advertising pays; he will reply, "Yes, definitely."

The Association doesn't package the products. Private individual firms handle that end, but they are licensed and pay in a royalty to the AT-FA for use of its Seal of Approval. This royalty payment is immediately "plowed" back into the advertising fund.

At first, attractive green and white cans were used, but due to the shortage of terneplate during the war, the industry turned to glass bottles which also makes a most attractive article.

What Are Naval Stores?

From many inquiries out of the South, the Association has gathered that there is some confusion as to just what Naval Stores are. Some people seem to see guns, hammocks, "bell bottom trousers" and other naval gear.

The term originated in Colonial Days when North Carolina was the leading producer. The tar, pitch, rosin, etc., were shipped to Mother England who at once put them to the King's Navy for use aboard on sails, decks, and many other uses. Thus the term Naval Stores.

How far the industry has come from those days.

What with industry and governmental research and expanded outlets, it is very doubtful if those old timers would recognize their products today.
Uses of Turpentine—Thinner for paint and varnishes, solvent for resin, lacquers, varnishes, water-proofing compounds, rubber, drugs, polishes, insecticides and many other general household uses.

Uses of Rosin—Manufacture of laundry soap and soap powders, sizing for paper, paper board and wallboard, ester gum and other synthetic resins, paint driers, varnishes and lacquers, flat wall paints, water-proofing compounds; axle grease, cements, linoleum, floor waxes, pharmaceutical purposes and many others.

The paint and varnish trade, synthetic resin, ester gum, and paper and soap manufacturers consume about 70 per cent of the annual production of gum rosin. According to government figures, 20 per cent of turpentine is used industrially while 80 per cent is used in over the counter trade, small businesses and households.

Pine trees are farmed. The forests are worked in crops, a crop being composed of 10,000 faces, installed on trees.

The gum belt (or the gum producing pine trees) begins in South Carolina, thence to South Georgia, Florida, a portion of Alabama, Mississippi, and Louisiana.

Approximately 20 years must elapse before a tree reaches 10 inches in diameter at a point 4½ feet off the ground. This is the size recommended by the United States Forest Service, at which chipping should begin. Some of the more far sighted and progressive farmers wait for 11 inch diameters before tapping the trees. The slash pine (Pinus caribaea, Morelot) and longleaf pine (Pinus palustris, Miller) are the trees employed.

With the first breath of spring, operations begin and they conclude generally with the first cold weather in November. The gum circulates more freely in the warm season of the year.

On trees that are being worked, one fresh “streak” is put on each week for 32 weeks, starting at the bottom and working up the trunks. The workers use a sharp, short instrument known as a “hack” for scarifying the trees during the first three years of operation. For the next three years, he employs a longer instrument with a similar sharp cutting edge known as a “puller”. These workers are so adept that it is a common occurrence for one man to “handle” 5,000 to 10,000 trees a week.

Cups that collect the oleoresin, or crude gum, are attached to the tree just beneath the face or streaked area. Dippers walk among the trees and empty the gum into buckets. These buckets are carried to the road and dumped into barrels. The full barrels are then hauled to the still where the gum is cooked in a sealed kettle that is attached to condensing coils. The turpentine,
A new method of chipping is with the bark hack. The streak is not nearly as deep into the wood as the old method and many producers are turning to this new style of chipping.

Another new device for applying sulphuric acid to freshly chipped turpentine pines is this plastic bottle with a sprayer attached. On slash, a 40 per cent solution is recommended while on longleaf a 60 per cent solution is the one used. The acid increases gum production by as much as 50 per cent.
in vapor form, passes through coils that are surrounded with cold water resulting in the turpentine vapor condensing into a clear liquid. The remaining residue that is left from the distillation process is gum rosin. This substance, when cool, hardens into varying shades of hard, brittle, semi-transparent material.

When a tree has passed its period of usefulness for turpentine (each face can't exceed 90 inches in height), the gum farmer thins these trees out of his woods, for telephone poles, railroad cross ties, posts and lumber. Primarily though, gum farmers operate for turpentine, and this other business is entirely incidental.

It is a splendid conservation practice to thin out a thick stand of young trees and most of these are sold to pulp mills. Fire is an enemy of the gum producer, and he is constantly on guard against this menace. Tractors plough deep furrows through the woods as one method of preventing fires from spreading and trees are raked.

**Progress in the Naval Stores Industry**

In recent years, the old fire still has been replaced. Mr. Shirley, a well known authority on stilling, had this to say in his booklet about processing plants.

**Central Processing Plants**—The Naval Stores Experiment Station, Olustee, Florida holds a public service patent on cleaning and washing gum. The majority of the large processing plants are using the process which this patent covers. The first plant to use this process was built in 1938 at Hoboken, Georgia. Other plants are using processes patented by private individuals or corporations.

There are 23 central gum buying plants in Georgia, ranging in capital investment from about $20,000 to $250,000 each.

The gum cleaning process worked out by the Naval Stores Station dilutes, melts and filters the gum, after which it is washed. After washing, the gum is allowed to settle, at which time the foreign matter and water soluble materials not removed in the melter and filter are washed and separated from the gum.

The gum is diluted to about 35 to 40 per cent of its weight with turpentine, therefore, there is good separation of the gum and water. Water solubles and fine trash settle out with the water and are drawn off. The gum is then charged into a steam still where it is heated by submerged steam coils aided by live steam for distillation.

Turpentine vapors are removed similar to that for the fire still operation, except different type condensers are normally used which are more efficient and less bulky. The rosin is turned into large tanks from which it is packaged.

The advantages of the modern type processing plant over the fire still are (1) a more uniform naval stores product, (2) better grades of rosin, (3) better yields of rosin, (4) more economical operation and (5) good markets for sellers of crude gum.

Of the production in Georgia in 1945, approximately 80 per cent was marketed through the central processing plants; the remaining 20 per cent through fire stills.

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This is a typical “high box” or “pulling” face turpentine pine. The cover over the attached cup keeps the chips and trash out of the gum while the puller is putting on a new streak.

This young turpentine is starting this planted stand in a first year, “or virgin operation.” His father planted the slash pines in an old field in 1928. Note the low hanging cups and first streak on the trees.
In a recent issue of the AT-FA JOURNAL, official organ of the Association, Judge Langdale summarized for the members a vivid picture of the past ten years of the gum industry, which, as has been pointed out, applies not only to Georgia but other states of the Gum Belt.

Wrote Judge Langdale:

It would be impossible, within any reasonable scope, to detail all of the changes these past ten years have seen: The stabilization of prices through Commodity Credit Corporation Loan and Purchase Programs; large scale participation in the Conservation Program, with virtual elimination of undersize chipping; the beginnings of Acid Stimulation and Bark Chipping; the more recent studies in mechanization of the gum naval stores industry; increased accent on better living conditions for turpentine workers; the shift from a comparatively small number of large producers to a multitude of smaller "gum farmers"; the sharp decrease in factorage house financing; the beginning of the end for "turpentine leases"—these and many others. Some good, some possibly bad, others with benefits and disadvantages hopelessly mixed.

But the most phenomenal change of them all is, happily, one about which there can be no difference of opinion—the merchandising and marketing of turpentine in small containers. Even in this era of radar and atomic bombs, the 'little green bottle' is still a miracle and a marvel to me.

Today gum turpentine in attractive cans and bottles adorn store shelves—and, more important, customers' shelves—from ocean to ocean to border to border! I think that seven year accomplishment is a veritable monument to vision, intelligent and aggressive merchandising, and to the spirit of cooperation that made our national advertising program possible.

Other developments, possibly just as far reaching, are on the way. Soon, they tell us, the central stills—or their successors—will be manufacturing 'end products' rather than turpentine and rosin; that the gum naval stores industry is on the verge of becoming a 'chemical industry'. So be it! I could, with a feeling of perfect confidence, entrust the future of our industry to those two elements, chemicals and small containers.

There remains, of course, a depressing lot yet to be accomplished in the gum naval stores industry. But don't say we aren't making any changes.

If you feel that way about it, just keep your eyes on the next ten years and watch what happens!

The Forester and the Naval Stores Industry

The Judge stated on a recent occasion that a young forester had a fine future in the South.

He went on to say that very few turpentiners could afford to hire a full time technical forester in turpentining alone. However, there is a big demand for foresters to work with southern timberland owners in the fields of all-round utilization and forest management.

And better still if a young forester has a decided aptitude for mechanics come south. There is a fortune awaiting him if he has a good, cheap, practical plan for mechanizing the Gum Turpentine Woods.
No one has yet come up with a plan that will reduce the chipper's time walking from tree to tree. There are methods for speeding up the work at the individual tree, but the chipper still must walk through heavy briars, gallberry bushes and other forest vegetation which makes it virtually impractical for him to ride a machine or lug heavy equipment.

Someday, however, a bright young fellow will come up with an idea, says the Judge.