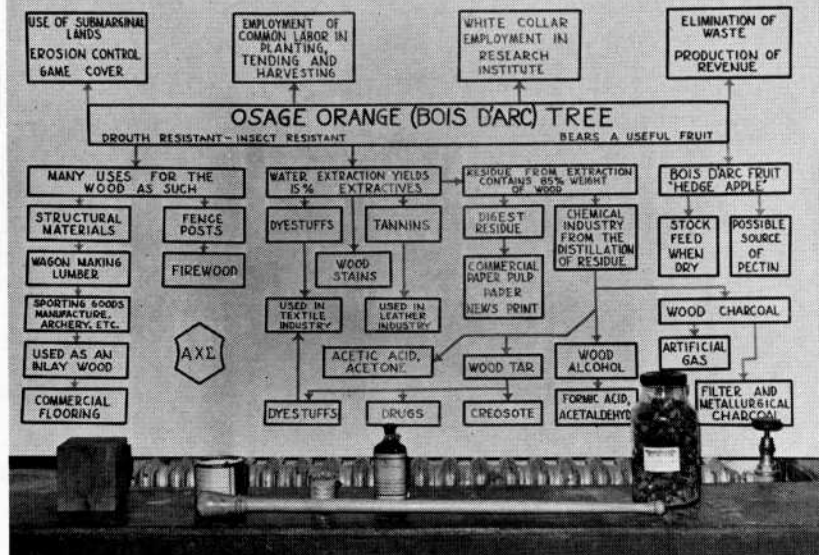


UTILIZATION OF SUBMARGINAL LANDS IN FOREST PRODUCTS BY THE CULTIVATION OF OSAGE ORANGE



The above chart suggests possible uses of Oklahoma's native bois d'arc tree. On the right is a row of bois d'arc trees growing by the Engineering Building

Oklahoma Trees for Chemurgy

SOME day when the chemists, the farmers, the business men, the relief administrators and other interested persons get together, Oklahoma is going to begin to capitalize on a lot of natural resources that are now largely ignored.

In the office of Dr. A. C. Shead, associate professor of chemistry at the University of Oklahoma, there is a bottle of dark liquid labeled fustic extract; a solid, heavy block of weathered hardwood, and a nicely finished wooden cane of an orange-yellow color.

These are sample products from a native Oklahoma tree, bois d'arc, now grown occasionally for hedge rows and capable of thriving on submarginal land in most parts of the state. Many farmers have used the tree as a source of tough fence posts.

Cautioning in advance that he proposes no get-rich-quick scheme, Dr. Shead suggests investigation into the possibilities of growing bois d'arc in submarginal land. The objectives: 1) to put flood control cover on unprotected land not good enough for standard farm crops; 2) to provide a cheap cattle feed—the "osage oranges" that grow on the tree after it is six to ten years old; 3) to provide a good hardwood useful in many ways; 4) as a source of a commercial dye extract; 5) for distillation to secure numerous wood products such as creosote and charcoal.

The wood of the bois d'arc tree yields fifteen per cent of its weight in dye which is suitable for dyeing leather and textiles, and Oklahoma is a large producer of

hides and cotton which call for dye before they are finished products. The United States, incidentally, imports considerable quantities of dyewoods.

A small commercial plant, known as the Indian Dyewood Extracts and Chemical Works, operated at Wapanucka for a number of years, producing and marketing "Osage Orange Extract." Later the Blue River Extract Company operated at Durant, handling a similar product extracted from bois d'arc chips.

Apparently these companies ceased to operate when the convenient supplies of bois d'arc trees were exhausted without more being propagated. Any successful industry in this field probably would have to be planned on a long term basis, with replacements provided for the trees that were cut. In southern pine areas, forestry experts have worked out exact formulas to determine how much can be cut from a given timber tract each year for continuous production of wood like a crop.

The extraction of the dye from bois d'arc wood is simple. The wood is cut into small chips, boiled in water, and the resulting extract is brought to standard concentration. By treatment with appropriate mordants, a variety of colors can be produced with the dye.

One factor that perhaps has prevented wide use of the fruit of the tree, variously known as osage oranges or hedge apples or horse apples, is the presence of a poison in the fruit in its green stage. This poison, like a similar chemical factor

found in cotton seed, can be removed by drying, or by artificial oxidization, and the resulting product is useful for cattle feed like cottonseed cake.

The wood of the bois d'arc is exceedingly dense, running about 48 pounds per cubic foot. It is also quite tough, and has been found excellent for archery bows.

In fact, the tree's name is French for "wood of the bow," and was so named because the early explorers found it being used in this way by the southwestern Indians.

One reason it has not been used more as a hardwood is that the tree suckers rapidly if left alone, and unless the suckers are taken off regularly the wood becomes knotty. With proper care, clear, solid hardwood can be produced in substantial dimensions. Dr. Shead's information is that the bois d'arc grows 25 feet high, with an 18-foot spread and a trunk 7.4 inches in diameter in a period of thirteen years.

The tree is largely immune to insect pests, probably because of the large quantity of dye in the wood, which belongs to the phenol family and is insect repellent. Dr. Shead has found the tree growing as far west as Mangum. Thousands have been planted in the federal government shelterbelt project.

But bois d'arc isn't the only thing that Oklahoma chemists have their eyes on speculatively.

Plain old mesquite which grows wild in the dryer parts of Oklahoma and much

(PLEASE TURN TO PAGE 30)

Rare Offering

Folio of Kiowa Indian Art

30 prints of water color paintings,
in full color, with introduction by
OSCAR B. JACOBSON

\$50
Complete

Published in Nice, France, in a limited
edition of 750 copies. Including paintings
by Monroe Psa-To-Ke, Steve Mopope,
Jack Hokeah, Spencer Asah, and Bou-
Go-Tah Smokey. A limited number of
complete folios are available at \$50.00
each, or individual prints may be pur-
chased at \$2.50 each.

Recent Books

of special interest to University
of Oklahoma Alumni:

RUSSIA THROUGH THE AGES

A comprehensive historical study of Rus-
sia by S. R. Tompkins, associate profes-
sor of history in the University of Okla-
homa. Published by Prentiss-Hall, New
York.

\$4.50

TRAVELS ON THE OSAGE PRAIRIES

First American translation of Victor
Tixier's account of his travels in the
Osage Indian Country a hundred years
ago. Published by the University of Ok-
lahoma Press.

\$3.00

ORDER FORM

The University Book Exchange
Union Building
Norman, Oklahoma

Please send the following books:

[] Send C.O.D. [] Check Enclosed.

Name -----

Address -----

City and State -----

Oklahoma Trees for Chemurgy

(CONTINUED FROM PAGE 11)

of Texas can be made to yield a gum
that is chemically about the same as the
valuable gum arabic imported from the
Mediterranean. This product brings
around 25 cents a pound, and has many
uses such as serving as an ingredient of
sizing and various kinds of adhesives.

To "harvest" a crop of the gum from
mesquite, you need men to stab wounds
in the trees—somewhat like tapping tur-
pentine pines—and then collect the hard-
ened lumps of gum that ooze out. This
is a hand labor job, but might beat re-
lief work.

Mesquite also is a honey plant, and its
beans can be used as stock food.

Then there is the sassafras wood that
now grows wild in many parts of Okla-
homa where the climate is comparatively
moist. Some Oklahomans know that
fragrant tea can be brewed from the dried
sassafras roots, but not many know that
sassafras wood will yield one per cent of
its weight in a volatile oil valuable for
soap, perfumes and other purposes. The
other 99 per cent could be used for wood
distillation products.

Gorgeous hillsides of sumac are ac-
cepted by most Oklahomans as one of
the state's esthetic assets in the autumn.
But those same leaves that redden the
hills so beautifully yield 16 to 25 per cent
of tannin, the chemical product used to
tan leather.

Oklahoma has hides, tannin and dyes,
yet a large proportion of the leather goes
outside the state to be processed.

Maybe these proposals aren't practical.
Maybe there are reasons why none of
them will prove economically sound.

But the chemists like Dr. Shead are
urging that the state get research projects
under way to *find out* whether these na-
tive plants that grow easily under Okla-
homa conditions can be developed profit-
ably—to create new industries and to pro-
vide more employment and to utilize sub-
marginal land.

Graduate students working on scholar-
ships and fellowships in chemistry and en-
gineering and business administration
could do much of the necessary investi-
gation of chemical properties and manu-
facturing problems and potential markets.
Until the possibilities are explored, no
one can say with certainty whether these
suggestions are practical.

It is human nature to look afar for
treasures and overlook what is close to
home. One of the divisions of the Univer-
sity is quite proud of an elaborate collec-
tion of wood from trees all over the world.
It was discovered the other day that the
collection did not include a single sample
from Oklahoma's native bois d'arc!

Civic and business leaders of the State
are eager for new industries to stabilize
employment and business conditions. They

will find the chemists full of suggestions
for possibilities to be investigated.

▲ ▲ ▲

Campus Review

(CONTINUED FROM PAGE 9)

student from Ada. If conditions in Euro-
pe permit, she will be sent to Paris to
study.... Joe N. Boaz, Oklahoma City,
senior in the School of Architecture, is
one of five students in the entire nation
to be awarded graduate fellowships in the
School of Architecture at Columbia Uni-
versity, New York City. Boaz earned
the highest grade average ever made by
any student in architecture at O. U.

.... Pharmacy students have adopted a dis-
tinctive olive green shirt with gold braid
design.... Tau Beta Pi, honorary en-
gineering fraternity, has constructed a con-
crete monument, with seats, near the en-
trance of the Engineering Building....
Faculty members attending the annual
Phi Beta Kappa initiation banquet were
somewhat astonished to hear Norman
Reynolds, junior speaker, urge the Uni-
versity administration to deal more dras-
tically with students who lag behind schol-
astically.

.... University Playhouse last month pre-
sented *Much Ado About Love*, as the Ok-
lahoma prize play for 1940. Authors are
Paul Barnett, '36fa, and J. H. Altman,
both of Hollywood. Campus reviewers
found flaws, but pronounced it enter-
taining. Anita Stewart and Dick White
played leading roles. John Dunn di-
rected.

▲ ▲ ▲

Summer Radio Schedule

Sunday evening, June 9, WNAD, the
University radio station, will begin its
summer schedule of broadcasting with the
Union Vesper Service from the Outdoor
Auditorium. It will be on the air six
and one-half hours each week.

All broadcasting time during the re-
mainder of the first week will be turned
over to the Institute of International Re-
lations. Broadcast of the regular Tues-
day evening band concert on the campus
will begin the following week. The Uni-
versity of Oklahoma Roundtable will con-
tinue to reach listeners all over the state
via WNAD and the Oklahoma Network
at 8:30 o'clock Wednesday nights.

Other highlights of the summer sched-
ule include the weekly School of Religion
program and the WNAD Dramatic Play-
ers every Thursday night, talks by Dr.
Oliver E. Benson every Tuesday evening,
and the Radio Short Course, July 11 and
12. Broadcasts of news, music and travel-
ogues will be added to make up a well
balanced schedule.