D A T A S H E E T

WASHINGTON

Industry

Transportation Equipment*	$ 9,021,000,000
Food and Food Products	5,000,000,000
Lumber and Wood Products	3,690,000,000
Paper and related products	2,661,000,000
Primary Metal products	2,519,000,000
Non-electrical Machinery	1,209,000,000

*Boeing Weyerhauser

Agriculture for 1983

$3 BILLION yielded in farming in 1983.
#15 for earnings in the U.S.

Leading producer of Apples-- 36% of U.S. total (3 billion pds)
" " " Hops and Cherries
2nd in Grapes, Apricots, Prunes, and Plums
3rd in Pears

Other Primary crops: Wheat, Potatoes, Barley, Corn, Sugar Beets, and Peaches

IDAHO

Industry (1982)

Food and Food Products*	$ 2,300,000,000
Lumber and Wood Products	897,800,000
Chemicals & Allied Products**	623,100,000
Non-electric Machinery***	545,600,000

*Ore-Ida Foods **Boise Cascade ***J.R. Simplot

Agricultural (1983)

$2 Billion in farm earnings in 1983-- 27th in U.S.
Fifth in U.S. for Lumber Production

Leads country in Potato production- 26% of U.S. total in '83
3rd in Hops, Sugar Beets, Barley
4th in Edible Dry Beans
5th in Mint
Also important with Hay and Wheat

OREGON

Industry

Lumber and Wood Products	$ 5,510,400,000
Papermill & Pulp products	752,700,000
Paperboard	485,300,000
Preserved Fruit & Vegetables	879,900,000
Frozen Fruit and Vegetables	659,400,000
Metals and Machinery	1,430,900,000

Shipments by manufacturers

Lumber and Wood Products	31%	(vs. 17% in 1982)
Food-related products	16%	
Paper & Allied Products	10%	
Primary/Fabricated Metals	10%	
Non-electric Machinery	7%	
Instrument Manufacturing	7%	

Recall "Silicon Forest" in Beaverton.

Agriculture

Select Crops:

Wheat	65.67M bushels	at	$ 256,716,000
Potatoes	20.710M hundredweight	at	81,872,000
Rye Grass	183.580M pounds	at	42,707,000
Pears	188,000 tons	at	41,792,000
Strawberries	794,000 hundredweight	at	30,988,000

Wheat has always been the #1 crop, since settlement time
Producing over 20% of Nation's White Wheat.

Leads the nation in: Boysenberries; Raspberries; Loganberries;
Boysenberries; Winter Pears;
Filberts; Peppermint Oil;
and several grass and seed crops

37,000+ Farms in 1984.
Nearly 50 Wineries in 1984.
30th in U.S. for farming cash receipts-- 1.7B dollars.
Over 170 different farm and ranch commodities produced
Over 25% of production is exported.

Datasheet information is taken from
Worldmark Encyclopedia of the States, 2ed. 1986.

Exploration of the Pacific Northwest by Naturalists & Plant Taxonomists

1843-44.
Captain John C. Fremont. Narration of the Exploring Expedition to the Rocky Mountains in the Year 1842, and to Oregon & Northern California in the Years 1843-1844.
Makes mention of numerous plants including: hedeome, astragalus, yampah (anethum graveolens; Root= a food source for American Indians), willow, alder, artemisia tridentata, Fremontia vermicularis, and Kooyah (valeriana edulis) Reached Walahwalah River by November and later Mount Hood.

meanwhile by 1845 A Synopsis of North American Lichens came out in Cambridge, Mass. written by Edward Tuckerman. His Genera Lichenum by 1872.

1850 on... Lesquereux (paleobotanist) travels begin through
Alabama, Georgia, Carolinas
1851 Penn.
1854 Ohio, Virginia, Kentucky, Arkansas

1860's on... Government Surveys
Northern Nevada & Utah-- The Great Basin
Snake River, Colorado

1867 Alaska and British Columbia
Western Nevada, and Virginia City, Nev.
1868 Carson City Wyoming Colorado
1869 Great Salt Lake, Utah N.E. New Mexico Idaho Montana
Eastern Colorado
1871 Yellowstone River S.W. and So. Colorado No. New Mex. Utah

1872 Expedition of Canada by John Macoun

1874 Colo. Ariz. New Mex. Wyo. Utah Nev. finished by Rothrock
Thomas C. Porter's Synopsis of Flora of Colorado
Asa Gray is beginning Synoptical Flora of North America.

1875 California

ca.1880 Engelmann & Charles Christopher Parry into Oregon and Calif.
"Three Sisters would be the best locality to study the whole Oregon and Northern California forest range better than the known localities as Mount Hood."
Lying down of Union Pacific Railroad
Watson was going to Montana and Idaho, and then travel along the East slope of Cascades to Oregon and Washington.
John Macoum went to the Canadian Northwest
1881 Wm. Suksdorf and Wm. C. Cusick becoming established as far Northwest Botanists.
1882 via Calif excursions, southernmost Oregon plants were noted and described by Asa Gray.

1883 The "New Botany" Era begun by Geaorge Engelmann who presented on May 29th his description of flora---
Plants collected by the Howell Brothers on Trask and Willamette Rivers.

ca.1883 Pacific Railroad Surveys written by Asa Gray.
Included help from Howell Bros. in Washington Territory.
So. California, Rocky Mountains, Canada, & Mexico researched into the next several years.

1884 Several more new species noted in the Northwest by Edward Lee Greene, i.e. Vancouveria.

1887 Gray (lumper) vs. Greene (splitter) controversy involving the Cruciferae Phaenicaulis and Parrya.

1888 South Vancouver Island studied; Alaska

1889 Asa Gray's Manual, 6ed.

1895 Rusby's Essential of Vegetable Pharmacognosy (designed especially for medical and pharmacy students...)

1899 Coulter's Monograph "Hesperogonia: A New Genus from Mount Ranier".

1901 Britton's Manual of the Flora of the Northern States and Canada.

1903 Thomas Howell A Flora of Northwest America containing brief description of all the known indigenous andnaturalised plants growing without cultivation north of California, west of Utah, and south of British Columbia. Based highly upon the works of Torrey & Gray, Sereno Watson, Wm. Trelease, Coulter & Rose, and Edward Greene. August 10, 1903.

1913 Britton and Brown's An Illustrated Flora of the Northern United States, Canada, and the British Posessions.

1915 Charles Piper's Flora of the Northwest Coast

1923 Leroy Abrams Illustrated Flora of the Pacific States

1932 Per Axal Rydberg Flora of the Prairies and Plains of Central North America.
Flora of the Rocky Mts, and adjacent plains-- Colo, Utah, Wyo, Mont, Sask, Alberta, and neighboring parts of Nebr, S. Dak, N. Dak, and B.C.

1933 Small's Flora of Southeast Flora

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PLANT LIST

Nettles (Urtica dioica)
Agrobacterium tumefaciens

Rape (Brassica rapa)

Wild Strawberry (Frageria canadense)

Amaranth (Amaranthus spp.)

Lamb's Quarters (Chenopodium album)

Foxglove (Digitalis atropurpureum) Digitalis heart drugs
Mexican Yam (Dioscorea spp.) Steroid drugs
Mayapple/American Mandrake (Podophyllum peltatum) Chemotherapeutic
Periwinkle (Vinca major; **Vinca rosea**) Chemotherapeutic

Australian Black Bean (Castanospermum australe)
AIDS-fighting toxin: Castanospermine
Wild Hemlock (Conium maculatum) AIDS-fighting toxin: gamma-Coneicine

Legumes: Precatory Bean (Abrus sp.) Toxic Lectin: Abrin
Black Locust (Robinia pseudacacia) Lectin: Robinin

Irish Moss (Chondrus crispus) Carageenan gel, or thickener
Kelp, Dulse, Laver (assorted species)
Chlorella nutrient= algae cells

Phanerochaete chrysosporium Tree-decay Fungus

False Hellebore (Veratrum californicum) Assorted toxins

Cascara Sagrada (Rhamnus purshiana/R. cathartica) Bitter Resins

Oregon Grape (Berberis nervosa/Mahonia aquilinum) Alkaloids/Resins

Valerian (Valeriana acutiloba) Valepotriates

Vanilla Leaf (Achlys triphylla) Coumarins

Sweet Clover (White= Melilotus alba; Yellow= M. officinalis) Coumarins
Bedstraw/Sweet Woodruff (Asperula odorata) Coumarins

Wild Ginger (Asarum canadensis) Aromatic Oils
Sweet Cicely/Anise-root (Osmorhiza claytonii) Aromatic Oils

Plants Studied in Natural Products Chemistry Laboratory, P.S.U.
(Dr. Al Levinson's Laboratory)

A. Alkaloids; esp. Benzyl-isoquinolines

1. Barberry Family (Berberidaceae)

Vanilla Leaf	(Achlys triphylla)
Mountain Oregon Grape	(Berberis nervosa)
Oregon Grape	(Mahonia aquifolium)
Inside-out Flower	(Vancouveria hexandra)

2. Ranunculaceae (Buttercup Family)

Baneberry	(Actaea rubra)
Columbine	(Aquilegia formosa)
Larkspur	(Delphinium menziesii)

3. Fumariaceae (Fumitory Family)

Bleeding Heart	(Dicentra formosa)

4. Papaveraceae (Poppy Family)

B. Coumarins

Vanilla Leaf	(Achlys triphylla)

C. Pigments

1. Anthocyanidins and Anthocyanins
   Oxalis (Fall-time; in nutrient-derived soils)
   Geranium spp. (ditto)

2. Unknown
   Fungi/Mushrooms
   Violet Cortinarius (Cortinarius violaceum)
   Polyporus spp.
   Clavaria/Ramalina spp.
   Carbon Balls (Daeldina concentrica)
   Deer Antlers (Xylaria sp.)
   Lichenae

D. Sesquiterpenoids, steroids and triterpenoids

1.	Devil's Club	(Oplopanax horridum)
2.	Tarweed	(Hemizonia spp.)
3.	Iranian Valerian	(Ferula sumbula)

E. The adsorbancy of Amanita's phallotoxins and amatoxins to a food additive.

INTRO
Purpose
Four Questions
Economic Aspects
Supply and Demand
Mike Wells MR culturing
Seed Banks

N.D.'s and NCNM Product; Herb Pharm...
Worldwide need- Food, Shelter, Medicine, Energy
Shelter; Pengelly's Research;
Agrobacterium

Rapeseed- Canola Oil

Lind and Vitamin C
Withering and Digitalis
Mexican Yam
Mayapple, Madagascar Periwinkle, and the Yew Tree
Red Cedar (Incense Cedar and Bald Cypress)
Castor Bean, Precatory Bean, and European Mistletoe.
Black Bean and Wild Hemlock

NW's Vast Ecosystems; History; Hx of Botanical Guides
Discovery of Penicillen and Test-tube medicines-- A General Theory
$B's spent on Rain Forests; Directing $ towards Investigating
the flora of the NW Olympic Peninsula Rain Forests.
Statistics; Cost for producing a drug/Value of the chemical
"Exotic" Drug Market

Tidal Pools
Algae-- Oriental Food source; Gels; Dulse and Laver;
Kelp; Nutrient source; Ethanol for Fuel;
Growing ponds
The Estuaries
Wood Debris and Estuarine Ecology
controlling Fungal Decay--
Phanerochate chrysosplenium for delignification
Protoplast Fusion
Inland
Western False Hellebore's Diverse Toxicology
Cascara Sagrada; Laxative; Resins; Use of Agrobacterium
Oregon Grape; Barberry
Valerian; Valepotriates; PTC'g
Vanilla Leaf's Aromatic Glycosides; Coumarins;
Sweet Clover & Bedstraw; Medicinal effect; PTC'g for the
flavor & fragrance industry; Vanilla Bean PTC'g
Wild Ginger--the same
Evergreens and Polyterpenes; methods of extraction; uses for fuel
The Yew Tree's Taxol; its rarity;
applications of Biotechnology: cloning; PTC'g; Genetic Eng'g

Clonal Propagation of Endangered Species; economically of the Orchidae

Oregon's deserts-- Artificial Biomes; Manzanita Wood for a fuel source

GEOGRAPHY COLLOQUIUM

WINTER 1988

This Wednesday afternoon series is jointly sponsored by the Geography Department and the Friends of Geography, a PSU student organization. The presentations are free and all interested persons are invited.

Jan. 13	**Peter Murphy** University of Victoria British Columbia	OPPORTUNITIES FOR TOURISM DEVELOPMENT
Jan. 20	**Richard Dewey** Geography, Portland State	NATURAL HISTORY OF THE VIRGIN ISLANDS
Jan. 27	**Brian Altonen** Medical Botanist & Historian	NEW BIOTECHNOLOGICAL APPLICATIONS OF PACIFIC NW FLORA
Feb. 3	**Carolyn Driedger** USGS - Water Resources Tacoma, Washington	GLACIAL OUTBURST FLOODS ON MT. RAINIER
Feb. 10	**David Hulse** Landscape Architecture University of Oregon	POSSIBLE FUTURES FOR THE COLUMBIA RIVER GORGE
Feb. 17	**Jack Gerstkemper** Mt. Hood Nat'l Forest	TIMBER HARVEST IN THE BULLRUN WATERSHED
Feb. 24	**Barbara Sarantitis** Soil Conservation Service	WATER SUPPLY FORECASTING
Mar. 2	**Lawrence Bauer** Urban Planner Pioneer Land Development, Inc.	COMPREHENSIVE PLAN AMENDMENT PROCESS: THE BEAVERTON EXAMPLE

REFRESHMENTS - 3:00, Geography Lounge
Room 424, Cramer Hall

COLLOQUIUM - 3:30
Room 418, Cramer Hall

Geographic Colloquium 199A may be taken Pass/No Pass for one credit.

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TownHall

KATU 2

ENGINEERING OUR FUTURE

Genetic engineering advances have created cows that produce more milk, chickens that are more resistant to infections, and leaner pigs. Farmers could save up to $1 billion a year in crops thanks to a newly created bacterium, which lowers the freezing point of plants, preventing frost damage. Humans have also been affected by biotechnological innovations. Tens of thousands of diabetics are now enjoying genetically-engineered human insulin at a fraction of the cost of animal-based insulin. And the future looks even brighter for more dramatic discoveries!

Not everyone is enthused by the growth of genetic engineering. Some fear that scientists are "playing God", experimenting first and asking the ethical questions later. Ecologists worry that genetic experiments in agriculture may disturb the delicate balance of our ecosystem. Animal rights advocates point to some of the negative side-effects that have accompanied animal productivity increases. And religious leaders have raised the concern that we're nearing a point where we could alter life itself.

How legitimate are these fears? What are the ethical issues raised by genetic engineering? Do the potential benefits to society of engineered organisms outweigh the risks? Are we reducing animals, plants, and even people to commodities for the sake of greater profits? Or, continuing our long tradition of utilizing technology to improve our quality of life? Will genetic screening lead to a "perfect race" mentality, where all "flawed" genes--and people--will be screened out? Or, are we on the threshold of combatting the major diseases of our century? What do YOU think? Join Jack Faust and his guests for this discussion on Sunday, January 10th from 6-7 PM. Guests should arrive at KATU (21st and NE Sandy Blvd) between 5-5:15 PM. Please call Mary Fetsch, Frank Mungeam, Janice Richkoff or Lynn Felton at 231-4620 for seat reservations. The public is welcome.

KATU Television Center
P.O. Box 2 Portland, Oregon
97207 (503) 231-4620

TownHall

KATU abc 2

January, 1988

Dear Friend:

We're so pleased you'll be joining us for our "Engineering Our Future" program. It will be broadcast live on Sunday, January 10th from 6-7 PM.

Guests should arrive at KATU (21st and NE Sandy Blvd) between 5-5:15 PM. If you'd like to reserve additional seats, please call us at 231-4620.

See you on the 10th!

Sincerely,

Mary Fetsch
Senior Producer

Frank Mungeam
Associate Producer

Janice Richkoff
Assistant Producer

Lynn Felton
Production Intern

Enclosure

Old-growth Forests: the Irreplacable Forest Floors

INTRODUCTION

The temperate rain forests of the Pacific Northwest have provided us with an incredible supply of economic resources. Over the centuries we have utilized its flora primarily as a source for lumber, pulp, and paper; and ultimately financial security. Only the herbalists, environmentalists, and sportsmen, who usually dealing with the natural products on a more personal level, have fully utilized these natural resources, often with a better understanding of their incredible ecosystems. To date, their financial security has had little effect upon the old-growth rain forests. With an increased interest in herbology, this fact may change due to unmonitored over-harvesting.

Economic gain has become a threat to these forests, for as the old-growth forests dwindle, so will the lumber industry, and so shall the other natural products of the northwest rain forests. Sustainable forestry of old-growth forests is not the ultimate answer to current dilemmas. As we remove old-growth and then replace it with new saplings, the exposure of the forest floor to sunlight destroys and then replaces nearly all of the flora during the decades to come. Environments that took centuries, or perhaps millenia, to develop their current stability will cease to exist; and so shall much of the flora.

Our most important plant resources remain undiscovered on the old-growth forest's floors. A number of these plants are rare and can be considered signatures for old-growth forests. They should be considered indicators of the future of ecological, sociological, and economical gains as well as represent what we stand to loose with improper management of old-growth forests.

Fungi		
Yellow Cup fungus	Carotenoids	[F, D]
Witch's Butter	"	"
Chantrelle Mushrooms	"	"
Cortinarius violaceus	Flavonoids: Anthocyanins	[F, D]
Lichens:		
*Lobaria pulmonaria	Indicative of Old-Growth.	
Usnea spp.; Parmelia	Complex Acids	[M]
Mosses	Anti-cancer drugs	[M]
Liverworts:		
Frullania	Sesquiterpene lactones	[Px]
Club Mosses	Spores	[M; Packaging]
Ferns		
Brake/Bracken Fern	Sterols (Insect Growth Hormones)	[M; Insecticide for Agric.]
Lady's Fern	Vermicide	
Gymnosperms		
Douglas Fir	Wax	[W, M]
Taxus brevifolia	Complex Alcohol (Taxol)	[M]
Lily and Orchid Families		
Cascade and Tiger Lily	Flavonoids	[Research aid]
Buttercup & Barberry Family		
Larkspur	Alkaloids	[M]
Oregon Grape (Mahonia)	"	[M]
Vanilla Leaf (Achlys sp.)	Coumarins	[Tobacco Additive; M]
Wood Sorrel (Oxalis sp.)	Organic Acid: Oxalic Acid	[Ed; Px]
Wild Ginger	Essential Oils	[F, E, P]
Mint Family: Cooley's Dead Nettle	Essential Oils	[P]
Heath Family (asstd members)	Sterol-acids; waxes	[M; W]
Mistletoe Family (Arceuthobium)	Lectins	[Px]
	and Waxes	[W]
Saxifrage Family	Anthocyanin Pigments	[F, D]
Currants	Organic Acids	[F]
	Essential Oils	[F, P]
Umbel Order		
Valerian Family	Complex acids: Valepotriates	[M]
Ginseng family	Ginseng Saponins	[S, M, Px]
Devil's Club	" "	[ditto]
English Ivy	Saponins	[S, M, M, Px]
Water Parsnip	Toxic Oil: Oenanthotoxin	[Px]

Potential uses for the chemical compounds:

F= Food additive (i.e. nutrient, colorant, flavorant, texturant)
M= Medicine (i.e. anti-cancer, anti-virus, anti-bacterial, anti-coagulant, diuretic, sleep aid, adaptogen, emmenagogue, etc.)
P= Perfume/Fragrance & Cosmetic Industry
D= Dye
S= Soaps, and/or Detergents
W= Waxes, i.e. Industrial lubricant, Shoe wax, Car wax.
Px= Poisonous
Ed= Edibility