

Biology 104

INTRODUCTION

Stout + Schuller's Plant
Chemicals + Human Affairs

Selection Plants for Man ed. 2
pp. 3-26.

9-10

One of few things University asks all instructors to do

{ At FIRST MEETING DESCRIBE BRIEFLY THE COURSE
TO SAY SOMETHING OF ITS PURPOSE

Biology 104 ONLY COURSE OF ITS KIND IN U.S., POSSIBLY IN WORLD
CALLED "PLANTS & HUMAN AFFAIRS", but actually a course in

Economic Botany

DEALS WITH PLANTS WHICH ARE USEFUL OR HARMFUL
TO MAN AND WHICH, IN ONE WAY OR ANOTHER, ENTER INTO
HIS ECONOMY

WHILE BASICALLY BIOLOGICAL, IT MUST NEEDS UTILIZE
MATERIAL FROM OTHER FIELDS SUCH AS ANTHROPOLOGY,
GEOGRAPHY, HISTORY, CHEMISTRY, PHARMACY, ETC.

COURSE UNIQUE AT HARVARD AT LEAST IN ONE
RESPECT - THE ONLY BIOLOGY COURSE WITH A PURELY
ANTHROPOCENTRIC ORGANIZATION

ANTHROPOCENTRIC MEANS EXACTLY WHAT ITS COMPONENT PAR
SAY: "CENTRED ON MAN". THERE IS NO EXACT SUB
STITUTE.

{ IT ASSUMES THAT MAN IS THE CENTRE AND ULTIMATE
END OF CREATION

AS SCIENTISTS WE KNOW THAT MAN IS NOT THE

CENTRE AND ULTIMATE END OF THE UNIVERSE
TO IGNORE THIS BASIC TRUTH WOULD BE TO TURN
THE CLOCK OF CULTURE BACK AND RETURN TO
SOME OF THE ABSURD THEOLOGICAL AND PHILOSOPHICAL
POSTULATION OF THE MIDDLE AGES.

SO LONG AS WE KEEP THIS CONSTANTLY IN MIND,
THERE IS NO REASON WHY, FOR PURPOSES OF
DISCUSSION, ^{WE MAY NOT} SOMETIMES ASSUME THAT HE IS.

SINCE THE COURSE IS

~~BEING~~ ANTHROPOCENTRIC - even when we know we have
a tongue in our cheek - ~~MAY OFTEN MAKE THE~~
~~DIFFERENCE~~ ~~AMONG~~ ~~THESE~~ ~~COURSES~~ ~~AND~~ ~~IT~~
certainly, we feel, makes the mass of material
in Biology 104 more interesting and more
easily managed.

THERE ARE, OF COURSE, A NUMBER OF WAYS
SUCH A COURSE MAY BE TAUGHT.

BIOLOGY 104 represents the oldest course in the USA de-
voted to plants and their uses. It was started by the
founder of the Bot. Museum, ^{Prof. Goodale,} in 1876. He also initiated the
collection of economic plants and plant products.

Later, the course was taught for many years by
PROF. OAKES AMES who added substantially to the
research and teaching collections and built up the LIBRARY

of ECON. BOT. Prof. Ames TAUGHT IT PRIMARILY AS A COURSE IN TAXONOMY OR CLASSIFICATION OF ECONOMIC PLANTS, STARTING WITH THE LOWEST PLANTS (ALGAE, FUNGI) AND PROCEEDING UPWARDS THROUGH THE PLANT KINGDOM TO THE COMPOSITAE. THE "AMES CHARTS" STILL USED, EVEN THOUGH COURSE IS NOW DIFFERENTLY ORGANISED.

There is much to be said for this approach.

Prof. MANGELSDORF, WHO BEGAN TEACHING THE COURSE IN 1942, WAS MORE INTERESTED IN THE ANTHROPOLOGICAL OR HUMAN ASPECTS THAN IN PURELY TAXONOMY. HE COINED THE PRESENT NAME OF THE COURSE: "PLANTS & HUMAN AFFAIRS" AND, IN HIS ORGANIZATION OF THE COURSE, POT ABOUT AS MUCH EMPHASIS ON THE "HUMAN AFFAIRS" PART AS ON THE "PLANT" PART.

HOW WILL IT BE GIVEN THIS YEAR?

AMES WAS A TAXONOMIST. MANGELSDORF A GENETICIST. LIKE AMES, WHOSE STUDENT I WAS, I AM A TAXONOMIST. HAVING TAKEN THIS COURSE UNDER AMES YET DIRECTED LAB AND GIVEN SOME OF THE LECTURES FOR SOME YRS NOW,

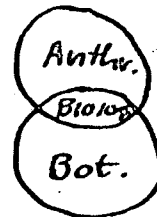
I BELIEVE THAT I PREFER THE METHOD OR APPROACH FOLLOWED BY MANGELSDORF. RESEARCH I HAVE GIVEN THE

COURSE (³¹⁴~~313~~) IN "TAXONOMY OF ECONOMIC GROUPS" WHICH I CONSIDER FOR SPECIALIZED STUDENTS. I SHALL, THEREFORE, FOLLOW CLOSELY THE RECENT ORGANIZATION OF THE COURSE, EXCEPT FOR SEVERAL MINOR ASPECTS IN WHICH IT WILL BE MORE STRONGLY BOTANICAL THAN IT HAS BEEN.

The course, then, is one we like to believe might almost equally well be offered by DEPT. of ANTHROPOLOGY as in BIOLOGY.

Represents a field where 2 impinge or overlap.

And we do overlap. PROF. MANGELSDORF



Origin of com.
an example.
Film.

A MEMBER OF PEABODY MUSEUM; has written a number of his research articles with anthropologists: Oliver, Willey, McMeish.

Many graduate students in Anthropology have taken the course and have done joint research with Museum staffs; Herbert Dick, David Kelly.

Dr. Towle, of our Ethnobotanical Lab., first trained as archaeologist.

My own work in modern Ethnobotany + mainly uses of plants amongst primitive societies.

Our own grad. students often have anthropologists on committees.

New arrow pointing
Hallucinations

There are several purposes. First

Purposes: This brings us to purpose of an inter-disciplinary course such as Biology 104.

↳ Perhaps we can best justify the study of ECONOMIC PLANTS & THEIR PART IN HUMAN AFFAIRS mainly in terms of GENERAL EDUCATION.

PLANTS & MAN live in SYMBIOTIC RELATIONSHIP

SYMBIOSIS = Greek "living together"

Its Modern meaning ^{has come to signify} = living together in more or less intimate relationship, ordinarily used when the association is advantageous to both

Have learned in EARLIER BIOLOGY COURSES ABOUT SYMBIOSIS IN LOWER FORMS OF LIFE

- 1) Bacteria living in nodules on roots of legumes, capturing N from air, fixing it in soil where it nourishes plant. Bacteria, in turn, nourished by carbohydrates manufactured by the legume.
- 2) Protozoa in intestines of termites digesting cellulose which the insect consumes
- 3) Plants lice or aphids kept by ants as domestic animals (cows if you will); ants consume sweet liquid or "honey dew" excreted by the aphids.

ALL THESE & OTHERS ARE INTERESTING EXAMPLES OF SYMBIOSIS BETWEEN DIFFERENT FORMS OF LIFE, ARE

TO ME NOT HALF AS FASCINATING AS THE SYMBIOSIS
BETWEEN MAN AND PLANTS

FOR EVEN THOUGH MAN'S VERY EXISTENCE IS ULTIMATELY
POSSIBLE ONLY BECAUSE OF THE PROCESS OF PHOTOSYNTHESIS
IN PLANTS — ^{AND WE MUST} GRANTED THIS — MAN DOES INDEED
NOW LIVE IN A SYMBIOTIC RELATIONSHIP WITH MANY
SPECIES OF PLANTS — ESP. HIS DOMESTICATED
PLANTS.

They provide him with the NECESSITIES of life.

In turn he provides them — at least the cultivated
plants — with their necessities:

1) extra minerals for soil in which they grow

2) often extra water

3) protection from competition with weeds, insects, fung
4) sometimes whole environment

Then some species would have long since disappeared if
man had not protected and propagated them. Some
(maize) would disappear to-day if man were to
disappear or to forsake them.

THIS PLANT—MAN RELATIONSHIP IN A HIGHLY ORGANIZED,
MODERN SOCIETY OFTEN BECOMES SO COMPLEX THAT
WE ARE NO LONGER AWARE OF IT.

BUT THE INTIMATE RELATIONSHIP BETWEEN MAN &
PLANTS UNIVERSALLY RECOGNIZED IN MORE PRIMITIVE
SOCIETIES (Note: We do not say "more primitive people").
TRAVEL IN MEXICO, PERU, AMAZON, etc. ASK NATIVES.

1
ABOUT A PLANT. HE WILL HAVE NOT ONLY A NAME FOR IT BUT WILL TELL YOU FOR WHAT IT IS CONSIDERED USEFUL, IF INDEED IT IS.

IF HE DOESN'T KNOW, ASK HIS WIFE — SHE ALMOST CERTAINLY WILL GIVE YOU THE CORRECT ANSWERS.

OUR CIVILIZATION HAS BECOME SO COMPLEX WE HAVE LOST INTIMACY WITH PLANTS BY AND ON WHICH WE LIVE. MOST OF US SO FAR REMOVED, SO MANY MIDDLEMEN, SO MANY PROCESSING OPERATIONS BETWEEN US AND ULTIMATE SOURCES OF THINGS WE CONSUME AND USE
→ MOST OF US HAVE LITTLE KNOWLEDGE ABOUT THE PLANTS UPON WHICH WE ARE SO DEPENDENT → OR THE PARTS THEY HAVE PLAYED IN OUR HISTORY.

THIS BRINGS ME TO A SECOND PURPOSE — HISTORY.

SINCE WE ARE ALL SO DEPENDENT ON PLANTS, IT IS INEVITABLE THEY PLAYED TREMENDOUS ROLES IN HISTORY.

ONE PURPOSE OF THIS COURSE IS TO EXPLORE THIS SUBJECT EXTENSIVELY.

I FIND IT DIFFICULT TO UNDERSTAND WHY HISTORIANS IN GENERAL OVERLOOKED THE IMPORTANCE OF PLANTS.

HISTORY USUALLY TREATED IN TERMS OF POLITICS & WAR, OR RELIGIOUS, ECONOMIC, SOCIAL CHANGES; GENERALLY UNAWARE OF THE BASIC SIGNIFICANCE OF THE SUPPLY OF PLANTS WHICH ARE SOURCES OF NECESSITIES AND EVEN LUXURIES OF LIFE.

YET HISTORY CAN BE WRITTEN LARGELY IN TERMS OF PLANTS.

Examples

- 1) What plant brought about a great intellectual eruption in Old World about 6th Cent. BC.?
- 2) What really initiated the Industrial Revolution in Europe 4 centuries ago?
- 3) What motivated Columbus' attempts to seek new route to India?
- 4) What spark set off the Revolt finally resulting in Am. independence?
- 5) Why was the great + powerful England unable to subdue the rel. weak colonies?
- 6) Why do many geopoliticians and economists now look to the tropics as the future home of great industrial civilizations?

WE HOPE TO FIND ANSWERS TO THESE & OTHER QUESTIONS AS THE COURSE DEVELOPS.

A THIRD RESULT WHICH MAY COME FROM STUDYING

TO STUDY

ECON. PLANTS: IT MAY HELP US ~~TO STUDY~~
MORE CLEARLY AND WITH BETTER BASIC UNDER-
STANDING SOME OF ACUTE & PRESSING PROBLEMS
OF TO-DAY. SORELY NEEDED.

ONE OF THESE — PROBABLY MOST URGENT — IS OBVIOUS-
LY WORLD FOOD PROBLEM. Consequently, we shall
be spending much time on food plants.

But food only one of many problems: fuel,
narcotics, caffeine, etc.

Each year since Mangelsdorf + I have been associated
with the course, some acute problem concerned
directly with ECONOMIC PLANTS, OR PLANT PRODUCTS.

DURING WAR YEARS — shortage and emergency supply
of fats, rubber, quinine

1954 — SHORTAGE AND HIGH PRICES PAID FOR COFFEE

1955 — TOBACCO AND LUNG CANCER

1956 — NEW METHODS OF TREATING MENTAL ILLNESS

WITH TRANQUILIZERS. Ancient Rauwolfia most

1957 — QUESTION OF WHETHER TRANQUILIZERS imp. one.

BEING OVERDONE

1958 — MEDICAL PROFESSION CONCERNED WITH NEW

STRAINS BACTERIA RESISTANT TO ANTI-

BIOTICS, WHICH THEMSELVES ARE PL. PRODUCTS.

1960 - *Neurospora sp. malana*
 1969 - *Neurospora sp. malana*
 1972 - Corn blight
 1973 - Arrival in New World of Coffee Blight
 1974 - High protein corn bred.

- 1959 - Endless debate on farm programme
 Cariberry scare in the autumn and virtual ruin of Mass. cranberry industry.
- 1960 - Further endless debate on farm programme
 Cutting of Cuban sugar quotas - if we cut it will Cuba go communistic - debate.
- 1961 - Prevention or reduction of cardiovascular disease by cutting fat intake and by substituting unsat. fats ~~for~~ of plant origin (esp. corn) for saturated animal fats (esp. butter). YOU WILL HEAR MORE ABOUT THIS DURING PRESENT YEAR.
- 1962 - ~~TO YOUNG TO HAVE A DEF. PROBLEM YET - BUT IT WILL HAVE ONE OR MORE BASED ON OR CONNECTED WITH AN ECON. PLANT.~~ Even now Congress discussing new way to reduce farm surpluses and dairy industry is making hard fight for ^{comebacks}.

1963 and continuing - Hallucinogenic drugs - esp. marij.

FOURTH PURPOSE - PERHAPS MOST IMPORTANT ONE.

SIMPLY GETTING TO KNOW SOME OF THE IMP. ECON. PLANTS OF THE WORLD. THIS IS BASIC IF WE ARE TO BE WELL-INFORMED PEOPLE.

WE ALL LIKE TO HAVE SOME ACQUAINTANCE WITH WORLD'S LITERATURE, ART, MUSIC, ARCHITECTURE, WITH DIFFERENT COUNTRIES OF WORLD, THEIR PEOPLE AND CUSTOMS.

BY SAME TOKEN: We should strive to know something

about the world's plants — and, for most people, the meaningful plants are the useful ones.

{ FOR THEY ARE OFTEN AS MUCH MAN'S CREATIONS AS ARE HIS ART & MUSIC.

↘ ↙
CONSEQUENTLY: LAB WORK IN IT CONCERNED WITH
SIMPLY EXPOSING STUDENTS IN AS MANY WAYS
AS POSSIBLE TO PLANTS & PRODUCTS.

WE HOPE THAT THIS CONSTANT EXPOSURE
WILL RESULT ON PART OF EACH OF YOU

- a) NOT ONLY INCREASED ACQUAINTANCE WITH
PLANTS & PRODUCTS, BUT ALSO
- b) INCREASED CURIOSITY ABOUT ALL KINDS
OF PLANTS.

I HOPE BY TIME COURSE ENDS, EACH OF YOU WILL
BE A LITTLE MORE CURIOUS ABOUT PLANTS BY WHICH YOU LIVE;
ANXIOUS TO TRY NEW FOODS, BEVERAGES; ABLE TO RECOG-
NIZE SUBTLE DIFFERENCES IN SUCH THINGS AS COFFEE,
TEA, TOBACCO, ALCOHOLIC BEVERAGES; ABLE AND WILLING TO
OBSERVE WHEN YOU TRAVEL (AND MOST OF YOU WILL
TRAVEL — AGE OF TRAVEL). SOME WILL TRAVEL FOR PLEA-
SURE (EASIER EACH DAY WITH JETS), SOME IN PROFESSION.
IF YOU BEGIN TO OBSERVE PLANTS + PL. PRODUCTS AND
HOW FOREIGN PEOPLES USE THEM, YOU WILL BE LAYING

THE BASIC FOUNDATION FOR THAT GREATEST OF
LACKS IN AMERICAN UNDERSTANDING OF THE REST
OF THE WORLD ——— AN APPRECIATION OF HOW
OTHERS LIVE.

SO MUCH FOR PURPOSES OF THE COURSE,
NOW A WORD ABOUT ITS GENERAL OUTLINE
AND CONTENT.

ON BOARD ^{Do not read.} General panorama of course organization
CLASSES OF PLANT PRODUCTS

{ Anthropocentric, hence an artificial
classification. Classes not mutually
exclusive.

- | | | | |
|---------------------------|---|--|--|
| 1. FOODS | } | I. Necessities | All mankind;
all degrees of
culture. |
| 2. FIBRES | | | |
| 3. SHELTER, FUEL (WOODS) | | | |
| 4. SPICES & PERFUMES | } | II. Ameliorants | Makes better or
improves life. Not
physiologically ne-
cessary. |
| 5. STIMULANTS | | | |
| 6. NARCOTICS | | | |
| 7. MEDICINES | | | |
| 8. POISONS | | | |
| 9. TANNINS, DYES | } | III. Raw Materials of
Modern Industry | |
| 10. FATTY OILS, WAXES | | | |
| 11. GUMS, RESINS | | | |
| 12. RUBBER, OTHER LATEXES | | | |

13)
[13] Ornamentals Only class we do not touch on here.
Only kind of plants many city people know about:
(Arnold Arboretum wholly devoted to this phase.)

This is I sequence we shall follow in lectures and laboratory.

a term applied by PCM for ⁱⁿ this sense.

This classification not hard - + - fast, or mutually exclusive. "Ameliorant" used chiefly in reference to conditions that are hard to bear or that cause suffering, and implies that partial relief or changes make them tolerable.

SEMANTICS: There is always a problem of semantics in every field.

Some people wish to reduce Econ. Bot. to cover only those plants useful in highly complex civilization — and keep "ethnobotany" for study of plants and primitive societies. Seattle congress.

There are others who wish to expand Econ. Bot. to include the indirect relationship between plants + man. ENCYCLOPEDIA BRITANNICA article. INCLUDE RANGE PLANTS, WATER CONSERVATION, SOIL BINDERS, ETC.

INTERESTING HEADING ON STATIONERY OF SOCIETY

FOR ECON. BOT.: "Devoted to the past, present and future uses of plants by man".

Read off from board table

- 1) Foods - problem always with us, probably always will be. No substitute for food.
- 2) Fibres - in spite of synthetics, natural vegetal fibres still of major and world-wide importance, and probably will so remain.
- 3) Shelter, Fuel - woods, coal, petroleum
- 4) Spices, Perfumes - as course proceeds, you will see why they are put in the same category.
- 5) Stimulants - caffeine beverages, coffee, tea, chocolate, cola, etc. Integral part of Am. life.
- 6) Narcotics - important in medicine - also social, moral, health problem. Alcohol - prohibition.
- 7) Medicines - 25 years ago, prediction that use of drugs of vegetal origin would end. We seem to be entering a new era for drugs of plant origins.
- 8) Poisons - closely allied to medicines. Tool in war against insects, rodents.
- 9) Tannins, Dyes - every person here wearing some of both
- 10) Fatty oils, Waxes - Soap, munitions, foods, polishes. Use increasing
- 11) Gums, Resins - paints, varnishes, medicines. Use increasing
- 12) Rubber, Waxes - key to modern transportation

Probably every person in this lecture room has made use of this day or will use before the day is over

Some PLANT PRODUCT in each of our categories

- 1) ALL HAVE EATEN OR WILL EAT
- 2) ALL ARE CLOTHED IN FIBRES
- 3) ALL ARE SHELTERED + WARMED
- 4) IF WE HAVE ALL USED SOAP, THEN WE HAVE USED PERFUMES
- 5) IF WE HAVE HAD TEA, COFFEE, COCOA OR COCA-COLA, THEN YOU HAVE USED CAFFEINE
- 6) IF WE SMOKE, WE HAVE USED A NARCOTIC
- 7) WE HAVE PROBABLY NOT (MANY OF US) USED MEDICINES TODAY, BUT A SIGNIFICANT % OF CLASS WILL BEFORE END OF TERM
- 8) POISONS — OUR FOODS HAVE BEEN PROTECTED FROM INSECTS
- 9) TANNINS - DYES — WE ARE ALL WEARING BOTH
- 10) FATTY OILS - WAXES — HAVE EATEN THEM, POLISHED SHOES, READ MORNING PAPER (PRINTER'S INK)
- 11) GUMS - RESINS — IF YOU HAVE BRUSHED YOUR TEETH, YOU HAVE USED GUMS (AND FLAVOURING AGENTS) AND YOU ARE SITTING ON FILM OF RESIN
- 12) RUBBER — DROVE CAR OR MOTORCYCLE, WALKED ON RUBBER HEELS OR SOLES, ERASER ON YOUR PENCIL

THIS CLASSIFICATION IS ONE IN WHICH CATEGORIES ARE BASED ON USE. WE ARE ALWAYS ASKING: "HOW IS THE PLANT USED?" AS WE STUDY PLANTS IN THESE SUNDRY CATEGORIES, WE SHOULD ASK A NUMBER OF OTHER QUESTIONS

- 1) WHAT IS THERE ABOUT THIS PLANT THAT MAKES IT USEFUL FOR A PARTICULAR PURPOSE?
- 2) HOW DID MAN DISCOVER THIS USEFULNESS?
- 3) HOW DID THE OFTEN VERY COMPLEX RELATIONSHIP BETWEEN MAN AND A PARTICULAR PLANT EVOLVE?

FOR JUST AS WE HAVE HAD ORGANIC EVOLUTION AND EVOLUTION OF SOCIETIES, SO THERE HAS ALSO BEEN AN EVOLUTION IN THE SYMBIOSIS EXISTING BETWEEN PLANTS AND MAN. AN ENTIRE LECTURE ON THIS WATER IN THE COURSE,

NB: Tell briefly about materials for study (if there be time). If no time merely emphasize richness of it.

MATERIALS FOR STUDY

Nowhere else will you find assembled such a diverse and rich array of materials for teaching + research in Econ. Bot. Truly said here: "He gets most from Bio 104 who puts most into it."

1)

Board

- 1) LITERATURE (books, journals, clippings, etc.) 21,000 titles
- 2) HERBARIUM SPECIMENS \pm 16,000
- 3) FROZEN SPECIMENS
- 4) RAW MATERIALS (crude plant parts: eg. fibres)
- 5) PROCESSED MATERIALS (eg. essential oils)
- 6) COOKED FOODS (EXPERIMENTAL KITCHEN) EXOTIC FOODS
- 7) CHARTS
- 8) PHOTOGRAPHS, PLATES
- 9) LANTERN SLIDES, KODACHROMES,
- 10) MOTION PICTURES
- 11) "GLASS FLOWERS" Absolutely unique - whole Plant Kingdom
- 12) OTHER HERBARIA, LIBRARIES, MUSEUMS

HILL'S "Economic Botany" (Ed. 2) Regular assignment.

Ames "Economic Annuals + Human Cultures"

Important journal: "Economic Botany" Some may wish to subscribe.

Schery: "Plants for Man"

Hutchinson & Melville: "Story of Plants"

Jönsson: "Gagnväxter"

Probably only place in world where such a course can be given.

Most of assembling by Goodale + Ames: they travelled extensively,

Mangelsdorf and I travel extensively but get mainly things
such exotic and little known articles as
for students to use in course: betel nut (India), guaraná
(Brazil), yucca (California)

10
Thanks to these extensive resources, you will, during
next 4 mos. HEAR about plants

READ about plants

WRITE about plants

SEE, TOUCH, SMELL, TASTE plants and even

DRINK and SMOKE some of them.

You may even, as one student said, begin to DREAM
about plants. HOPE IT IS NOT NIGHTMARE!

Museum and personnel

WANT TO MENTION PEOPLE ASSOCIATED WITH ME IN THIS
COURSE. FIRST A FEW WORDS ABOUT THIS MUSEUM.

This is Bot. Mus. Part of a system of Museums that grew up
into a community. Five (Zool, Anthr., Min. & Geol, Bot.) - all
under one roof but independent.

Oldest ^{Bot. Mus.} MCZ, celebrated centenary last yr. Founder
Louis Agassiz

Next Peabody.

Botanists felt need to get into ^{the} Museum picture, so Prof.

Goodale funded this Museum + initiated two of
its important collections: Glass Flowers, Econ. Pl. Coll.

Before building Bio labs., all botany courses taught here;
today only Bio 104 in this building.

Depts. of Museum have outgrown the building = Econ. Bot., Ethn.

botany, Paleobotany, Orchidology, Maize Research, Origin of Cult. Plants.

Virtually all members of Museum staff participate in this course.

Prof. Mangelsdorf, on sabbatical in England, will not be participating, but his stamp and influence is so strong it will be constantly felt.

Dr. A. F. Hill, author of your text, has moved to Maine; he has been "retired" for seven or eight yrs., but has only this year moved. However, he will be up each month and will give several of the lectures in his special fields.

Dr. Margaret A. Towle, chief of our Ethnobotany Lab, will participate and will initiate you into the exciting work of studying archaeological remains of plants.

Prof. Elso S. Banghoorn, our paleobotanist, may give a lecture on fossil economic plants.

Mr. W. C. Bierweiler ~~table displays.~~

Several of our graduate students in the Museum will speak to you on the origin and domestication of certain economic plants which they have studied deeply: Mr. Chaganti (rice), Mr. Sehgal (wheat); Mr. Wilkes (barley); Mr. Soegeng (sugar cane); Mr. Bristol (potatoes).

Mr. Walton C. Galinat, colleague of Prof. Mangelsdorf and maize morphologist, will tell you about the history of corn.

Pinkley
Plowman
Martin
Hockwood

Miss Esther Reynolds - Museum secretary. In charge of library

Duncan Porter

last but certainly not least - Mr. Garrison Wittkes

Lab. Men.

will be in charge of lab work. I shall drop into the laboratory on occasion, but only because we like to share the students' progress. Mr. Wittkes, ~~who has spent much time in India~~, ^{Mr. Porter} is very capable and willing - make the fullest use of his contribution.

We are old fashioned enough to

Course demands most of our time. ~~the~~ believe first function of a University is teaching - drop extra research, administration -> in order to make ourselves available to every student in Bio. 107.

Requirements

- A. Lectures M-W-F (Friday off largely a delusion)
- B. laboratory sections 3 1/2 hours a week.

But also oral and written reports equivalent to another 3 hours. SOME STUDENTS EACH YR. HIGHLY INDIGNANT AT THIS OUTSIDE WORK. We do not waste much sympathy on these.

FIRST LAB SECTIONS TO MEET TUES - WED OF THIS WEEK.

- C. Term papers

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So think early of your term paper subject—it is, of course, a reading-period job, but if you get at it earlier it will be easier and a better paper.

Two of our TERM PAPERS HAVE WON BOWDOIN PRIZES

1959 Grave: "Use of Artemisia Absinthum in medicine and in absinthe"

Bauman

Tabor

Nutmeg-Weil

1960 Grover "The deadly upas tree"

1960 { Grobman: "Use of maize in prehistoric Peru"
Abend: "Violins and forest products used in their manufacture"

-1959 { Schwartzman: "Lobelia inflata as a smoking deterrent"

1958 { Bauman: "Botanical aspects of ancient Egyptian embalming"

1957 { Goldman: "Amanita muscaria - bridge to fantasy"
Blohm: "Poisonous plants of Venezuela" (Harvard Univ. Press)
Robb: "African ordeal poisons"

earlier Putnam, George: "Cotton seed" Pres. of Putnam Investment Funds, director of several banks.

Grade system

Final Exam \pm 30%
Mid term exam \pm 15%
Laboratory \pm 20%

I think I should warn you: it is not an easy course, as a first glance might suggest.

Perhaps easy in this sense: few students ever actually fail \rightarrow although this has been known.

↓ But I will be frank: it is not easy to make an A.
WE GIVE A LOT AND WE EXPECT A LOT. ↓

There are, every year, a few students who become so absorbed that they run the risk of neglecting other courses. We ask only that you keep your equilibrium in this regard. NO SLIDING SCALE \rightarrow ONLY TERM PAPERS MARKED IN COMPARISON WITH OTHERS.

SOME MAY COME INTO THE

COURSE UNDER THE ILLUSION THAT A COURSE IN BIOLOGY DEVOID OF MATHEMATICAL COMPLEXITIES AND WITHOUT COMPLICATED MACHINERY AND EQUIPMENT — AND ONE THAT TREATS OF THINGS KNOWN FOR THE MOST PART IN DAILY LIFE AND WITH A VOCABULARY UNDERSTANDABLE TO MOST PEOPLE MUST BE EASY

WE DO NOT SAY IT IS DIFFICULT, BUT WE HOPE THAT ALL OF YOU WHO ENROLL WILL LOOK UPON IT AS AN UNPARALLELED ADVENTURE AND THAT YOU WILL LET US SHARE IT WITH YOU AND GUIDE YOU THROUGH ANY DIFFICULT PLACES.

SPEAK ABOUT SIGNING CARDS, FOR LAB SECTIONS.

I SHALL BE AVAILABLE IMMEDIATELY FOLLOWING LECTURE FOR QUESTIONS.