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August 10, 1932

Miss Esther J. Lichtmann
Roerich Museum
310 Riverside Drive
New York, N. Y.

Dear Miss Lichtmann:

Referring to the matter of selecting a successor for Dr. Koelz for work at the Himalayan Research Institute, I enclose herewith documents submitted by Clayton M. Cook who had an interview with you a short time ago, together with supporting letters from Dr. House and Dr. Rusby. I would suggest that these documents be forwarded to Dr. Georges de Roerich, with a definite statement to him that I recommend Mr. Cook for the position in which he is interested. My suggestion to him was that we should attempt to secure the services of a trained pharmacologist, preferably one with botanical proclivities, and Mr. Cook seems to me to qualify under both categories.

In communicating with me Dr. de Roerich stated in April that the Institute could offer the following accommodations to a pharmacologist:- "Salary - \$200 per month, of course, under present circumstances it would be preferable to obtain a man willing to work for a smaller salary; field expenses paid by the Institute in the field and at the Headquarters in Naggar; first-class ticket from New York to Naggar, India; quarters consisting of a bedroom, with bath and study. The candidate should, of course, be single. The period of work - one year with option to renew for a second year. A pharmacological laboratory is provided in our plan, and the laboratory building is now under construction and will take at least a year to complete. A temporary laboratory can, of course, be organized. At the outset the work will chiefly consist in recording local information."

Very truly yours

E. D. Merrill
Director

EDM/GMS

(Enclosure)

THE UNIVERSITY OF THE STATE OF NEW YORK
THE STATE EDUCATION DEPARTMENT
NEW YORK STATE MUSEUM
ALBANY, N. Y.

CHARLES C. ADAMS
DIRECTOR
ALVIN G. WHITNEY
ASSISTANT DIRECTOR
AND SECRETARY

RUDOLF RUEDEMANN
STATE PALEONTOLOGIST
D. H. NEWLAND
STATE GEOLOGIST
R. D. GLASGOW
STATE ENTOMOLOGIST
H. D. HOUSE
STATE BOTANIST
C. A. HARTNAGEL
ASSISTANT STATE GEOLOGIST
WINIFRED GOLDRING
ASSOCIATE PALEONTOLOGIST
K. F. CHAMBERLAIN
ASSISTANT STATE
ENTOMOLOGIST
ELSIE G. WHITNEY
ASSISTANT STATE BOTANIST

ZOOLOGIST
NOAH T. CLARKE
ARCHEOLOGIST

OFFICE OF THE STATE BOTANIST

August 5, 1932

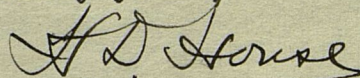
Dr. E. D. Merrill, Director
New York Botanical Garden,
Bronx Park,
New York City

Dear Doctor Merrill:

From my acquaintance with Mr. Clayton M. Cook I have a very high regard for his ability and industry and believe that his training fits him for a responsible position with the Roerich Institute of Himalayan Research.

I trust that my work in his behalf may go along with yours and that of Dr. Rusby's in his application for the position.

Sincerely yours,



H. D. House
State Botanist

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College of Pharmacy
of the City of New York
Columbia University
113-119 WEST 68TH STREET, NEW YORK

August 8, 1932

The Director
Rohrich Museum
New York, N. Y.

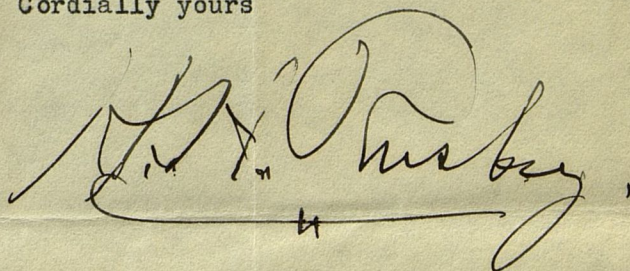
Dear Sir

In accordance with a request from Dr. Merrill to find a young man capable of serving you in the capacity of a collector especially in medical botany, I am recommending Mr. Clayton M. Cook, the bearer of this letter.

As a student here, Mr. Cook has shown marked interest and ability in the line of work in which you desire service. He has qualified thoroughly in the several pharmacological branches included in our course, and has taken our preliminary course in vegetable taxonomy, under my personal instruction. It was his intention to pursue our graduate course, but I have advised him that he would gain quite as much from practical field work at this time. Should you see fit to appoint him, we should devote some weeks here before he leaves to giving him special instruction at the Botanical Garden and at this College in the details of collecting.

Mr. Cook is enthusiastic and energetic and I feel sure that he will succeed in this work.

Cordially yours


H. A. Purdy

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COLUMBIA UNIVERSITY
COLLEGE OF PHARMACY OF THE CITY OF NEW YORK
DEPARTMENT OF MATERIA MEDICA
113-115 WEST 68TH STREET

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August 8, 1932

Dr. E.D. Merrill, Director
New York Botanical Gardens
Bronx Park, N.Y.C.

Dear Dr. Merrill:

Following your suggestion, I am enclosing herewith my application for the position open with the Himalayan Institute of Research of the Roerich Museum.

I want to thank you very much for the interest you have taken in my behalf and I hope I may be of service to you in the future.

Very truly yours,

Clayton M. Cook
Clayton M. Cook

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27 West 86th Street
New York City
August 8, 1932

The Himalayan Research Institute of the Roerich Museum

Gentlemen:

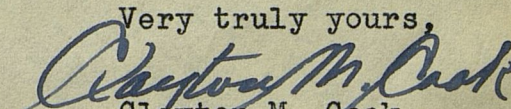
The possibilities of an appointment as Botanist-Pharmacologist in the Himalayan Research Institute have come to my attention through Dr. Merrill of the New York Botanical Gardens. If such an appointment is to be made I desire to be considered as an applicant for the post.

My understanding of the duties is that the appointee must be a man not only with sufficient botanical training to enable him to carry on field work, but that he must also be sufficiently grounded in chemical work, and particularly its medicinal aspects, to ascertain the possible medicinal value of materials gathered in the field.

Dr. Rusby, under whom I have worked for the past year, is of the opinion that, in an undertaking of this sort, a pharmaceutical training with additional work in botany is essential. With the wide scope of a modern pharmaceutical education, including as it does materia medica, chemistry and pharmacy, together with more specialized work in systematic botany and pharmacognosy, I believe I am capable of satisfactorily fulfilling the requirements of the position if they are as stated to me.

I append a statement of my personal history and qualifications, while I believe the duties of the post are such as to warrant the payment of \$2400. per annum, I am willing to accept a lesser amount until I have had an opportunity of demonstrating my fitness.

Very truly yours,


Clayton M. Cook

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Clayton Mein Cook

Born October 6, 1907 at North Harpersfield, Del.Co., N.Y.

Residence : Milford, N.Y.

Ancestry : Scotch-English

Religion : Methodist

Unmarried

EDUCATION AND EXPERIENCE:

1. Secondary: Graduate of the Milford High School, 1924
Post graduate at Hartwick Seminary, 1925
2. Collegiate: 3 years (1928-1931) at Union University,
Albany College of Pharmacy, receiving the
degree of Pharmaceutical Chemist.
Teacher in Botany: Dr. Wm.A.Mansfield
Teacher in Chemistry: Prof. Wm.Larkin

1 year at Columbia University, College of
Pharmacy receiving the degree Bachelor of
Science.
Teachers in Botany: Dr. H.H.Rusby
Dr. C.W.Ballard
Teachers in Chemistry: Dr. H.V.Arny
Dr. H.Kassner
3. Positions held: Retail pharmacy (1925-1928)
Laboratory assistant in Dept. of Botany
under Dr.Mansfield (1928-1930)
Laboratory assistant in office of Dr. E.A.Dupin
at 27 West 86, N.Y.C. (at present)
Drug Research with Dr.C.W.Ballard at the Columbia
College of Pharmacy (at present)
4. Interests: Drug Research, especially Pharmacognosy and
Materia Medica.
Systematic Botany
Radio, having owned and operated amateur radio
station W8CXS during 1927-1928
4. Publications: Blond Psyllium
Indian Black Psyllium (in preparation).
Investigation of the Adulterants of Prickly
Ash Bark (in preparation).

Blond Psyllium

By Clayton M. Cook, Ph. C., B. S.*

BLOND psyllium is now an article of considerable commercial importance and, while not perhaps as much in demand as the darker colored seed, undoubtedly may be similarly used. The botanical source of this seed is *Plantago ovata* Forsk, (*P. decumbens*, *P. Loefflingii*, *P. Ispaghula*). Commonly-used synonyms are Blond psyllium, Ispaghula, Ispaghul seeds and Spogel seeds.

Records indicate that *P. ovata* was first used about the 10th century.¹ At that time it was commonly found in all the bazaars of India and was held in great esteem. The seed was generally designated by the Persian word Ispaghul and also by the Arabic name Bazre-quotuna. The seeds are spoken of by various early writers including Alhervi, Avicenna and several other oriental writers quoted by Ibn Baytar. Ispaghula was admitted to the Pharmacopoeia of India in 1868 and was included in the British Pharmacopoeia of 1914.

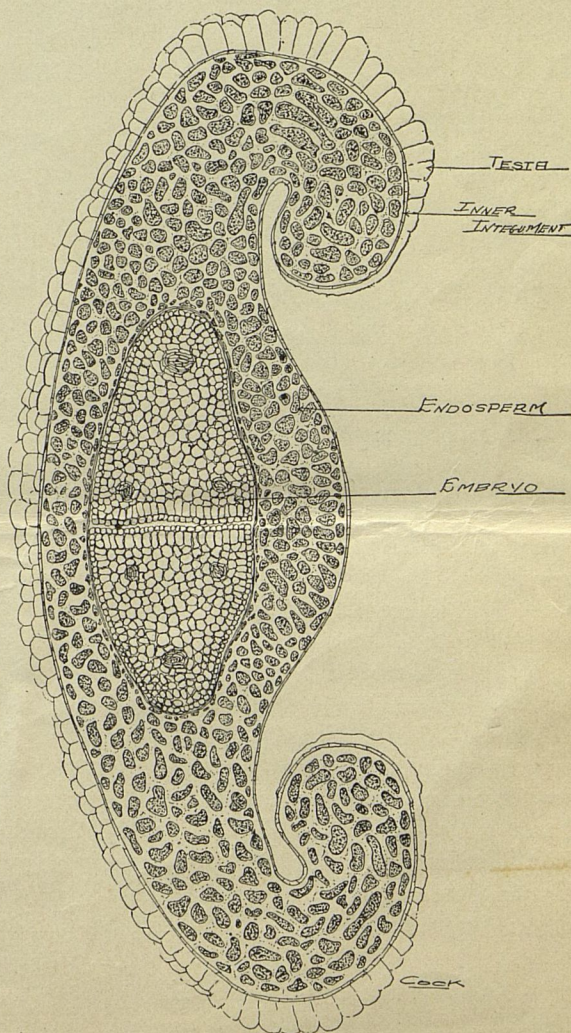
The plant has a wide range and occurs in the Canary Islands, Egypt, Arabia, Beluchistan, Afghanistan and Northwest India. The main sources² of this drug is British India where it is reported by Indian dealers to occur as extensive wild stands, the most important regions being in the vicinity of Gujarat, Bombay Presidency and in the United Provinces. The extent of cultivation is undetermined. The output in 1931 was unofficially reported to be about 4,000,000 pounds. This includes a small yield of *Lallemantia royleana* and an *Ocimum*, both of which are Indian seeds of mucilaginous character. There is no general standardization of these seeds in India as regards size, color, cleanliness and foreign matter. The Gujarat yield is said to be exported chiefly from Bombay while the United Provinces output is shipped largely from Calcutta.

The seeds are sometimes adulterated with Labiate fruits especially those of *Ocimum* and also with related species of *Plantago*, particularly *P. arenaria*.

Search of the available literature fails to show analytical data contrasting *P. ovata* with *P. psyllium*. An analysis⁴ of the seeds of *Plantago* psyllium and related species of *Plantago* as reported by Joseph S.

*This work was performed at Columbia University, College of Pharmacy, under the direction of Dr. C. W. Ballard.

A critical study of the now widely used *Plantago Ovata* has been made at Columbia University, School of Pharmacy. This is the first report of this interesting work.

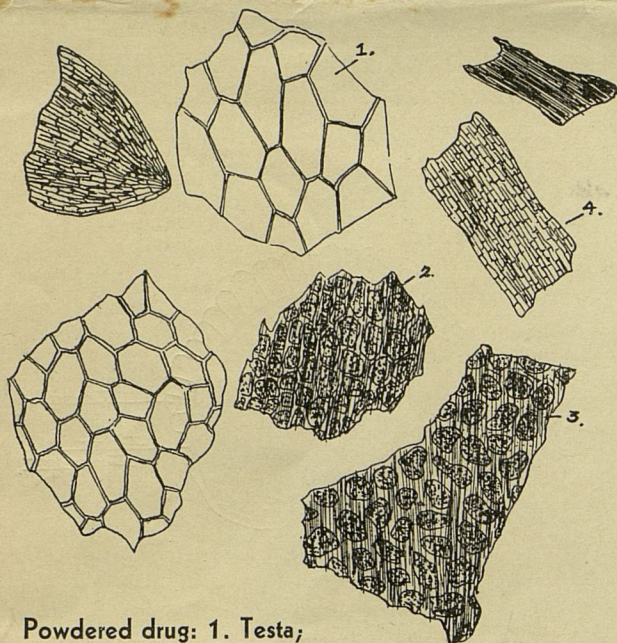


Cross-section of seed of *Plantago Ovata*

Hepburn and Thomas L. Laughin Jr. shows the following constituents:

Total solids.....	91.50%
Moisture.....	8.50%
Crude fat.....	6.40%
Total ash.....	3.16%
Insoluble.....	2.95%
Soluble.....	.21%
Crude protein.....	17.83%
Crude fiber.....	11.50%
Nitrogen free extractive.....	52.61%
Pentosans.....	9.85%
Galactans.....	.31%

The plant is described³ as an annual or perennial, villous-fleecy, stemless, leaves entire or obsoletely callous-toothed, narrow-linear to lanceolate, tapering at the base. Scapes as long as the leaves or shorter; spikes globular to ovate and oblong, 8 mm. to 3 cm.



Powdered drug: 1. Testa;

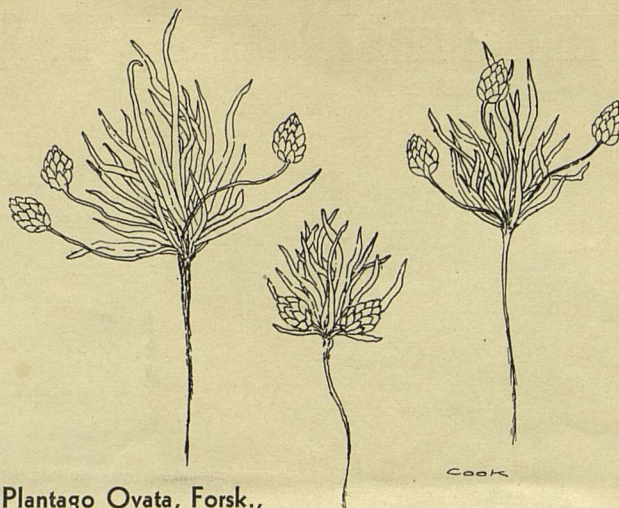
2. Inner Integument; 3. Endosperm; 4. Embryo

long: bracts round ovate, glabrous, obtuse, midrib herbaceous extending to the tip, margin scarios, glabrous or pubescent. Corolla-lobes ovate or round, mucronulate. Flowers March to April, fruit 3-celled capsule, each cell containing an albuminous seed.

The seeds are cymbiform or boat-shaped, the albumin being furrowed in the center and vaulted at the sides, somewhat acute at one end, 2-3 mm. in length and 1-1.5 mm. in width. Light pinkish-grey in color with an elongated brown spot on the convex back where the embryo is in close contact with the translucent testa. On the concave side of the seed is the hilum which is also brown in color and partially covered with a thin white membrane. In water the testa swells producing a viscous mucilage. The seeds are odorless and tasteless.

Histology of the Seed

A transverse section of the seed shows three distinct regions—Seed coat, Endosperm, Embryo.



Plantago Ovata, Forsk.,

drawn from specimen of New York Botanical Gardens

Seed coat consists of the following regions: (a) Testa composed of several, usually 3, layers of thin-walled, translucent, mucilage-bearing cells, polygonal, usually 5-6 sided varying from roughly isodiametric along the back of the seed to radially elongated at the sides. On concave surface, the epidermal covering is reduced to very small, thin-walled, tangentially elongated, non-mucilage-bearing cells. (b) Inner integument consisting of a thin brown layer of cells, angled, tangentially elongated averaging 20 microns in length and 8 microns in width.

Endosperm composed of thick-walled cells with opaque granular contents. The cells vary in shape from circular to slightly irregular, from 10 to 30 microns in diameter. The thickness varies from 6 to 15 cells except at points directly above and beneath the embryo where the cells are only 3 to 6 layers in thickness.

Embryo composed of two heel-shaped cotyledons adhering in a direction perpendicular to the concave surface. Each cotyledon consists of an outer epidermis of nearly square cells averaging 0.6 microns in length. Within this epidermis are numerous thin-walled cells, slightly larger in size and circular in outline, which contain albuminous granules and drops of fatty oil¹.

Powdered Drug

Considerable difficulty was encountered in reducing the seeds to a powder owing to their smooth chaffy coats. The powder is light brown in color and when examined microscopically shows the following elements: (a) Fragments of testa appearing as translucent, thin-walled, angled, polygonal cells. (b) Fragments of inner integument, dark brown in color, cells more or less elongated and angled. (c) Fragments of endosperm and embryo showing cells with granular contents.

In the popularity of the Psyllium type of laxatives, we see another instance of the revival or rediscovery of a drug material used several centuries ago.

Bibliography

¹Flückiger and Hanbury, *Pharmacographia*—A History of Drugs.

²Stephenson White, Dept. of Commerce, Chemical Division, Special Circular No. 355.

³Muschler, *Flora of Egypt*, Vol. II.

⁴American Journal of Pharmacy, October 1930.