

Quantitative Examination by the Carbon Balance Sheet Method of the Types of Products Formed from Glucose by Species of *Penicillium* (Including *Citromyces*): Appendix. History of Species Used and Dr. Thom's Diagnoses of Species

Charles Thom

Phil. Trans. R. Soc. Lond. B 1931 **220**, 83-92
doi: 10.1098/rstb.1931.0015

Email alerting service

Receive free email alerts when new articles cite this article - sign up in the box at the top right-hand corner of the article or click [here](#)

To subscribe to *Phil. Trans. R. Soc. Lond. B* go to: <http://rstb.royalsocietypublishing.org/subscriptions>

APPENDIX.

HISTORY OF SPECIES USED AND DR. THOM'S DIAGNOSES OF SPECIES.

(Note that Dr. THOM's remarks are in each case inserted in inverted commas.)

*I. Monoverticillata.**Section I. Monoverticillata-stricta.**Subsection 1. Sclerotigena.*

None.

Subsection 2. Stricta-floccosa.

- (i) Ad. 74, Ad. 79, Ad. 80. These three species were isolated at Ardeer, Ad. 74 from a distilled-water container, Ad. 79 and Ad. 80 from different samples of mouldy dextrin solution. "Ad. 74 and Ad. 80 in our cultures are practically identical, with a slight difference in appearance in Ad. 79. I have put them together and placed them in the group with *P. spinulosum* or, in deference to the belief that Dr. WEHMER's *Citromyces Pfefferianus* belonged somewhere in this group, *P. Pfefferianum* series. Our notes indicate that they approach *P. viridi-dorsum* BIOURGE, which, in our cultures from the transfer he furnished us, belongs here. These three species are much more characteristic of the *P. Pfefferianum* series than Ad. 71 and Ad. 73 (*q.v.*)."
- (ii) Ad. 78. Isolated at Ardeer from mouldy dextrin paste. "My notes add Ad. 78 to the Ad. 74, Ad. 79, Ad. 80 group."
- (iii) Ad. 21. Isolated at Ardeer from a contamination of a solution of bromthymol blue indicator. "I have put this species with a lot more into the *P. Pfefferianum* group, with WEHMER's *Citromyces* = *P. Pfefferianum*, *P. spinulosum* THOM and a number of BIOURGE's species, in which I based the allocation on the cultures he sent me, which do differ in detail but have too much in common to be differentiated by his description or mine."
- (iv) Ad. 29. Purchased from the British National Collection of Type Cultures, Catalogue No. 591, THOM and CHURCH, Washington 45. "Correctly labelled as *P. spinulosum* but see comments on Ad. 21."
- (v) Ad. 71. Purchased from PRIBRAM of Vienna in 1926. It bore the label on receipt of *Citromyces lacticus* MAZÉ and PERRIER. "Ad. 71 and Ad. 73 belong to the series in which the failure to produce colour is a prominent character and hence I regard these species as being in line with the *P. (Citromyces) Pfefferianum* group."
- (vi) Ad. 73. Purchased from PRIBRAM of Vienna in 1926. It bore the label on receipt of *Citromyces Pfefferianus* WEHMER. "See remarks on Ad. 71."

M 2

- (vii) Ad. 115. Purchased from the Centraalbureau at Baarn in 1929, labelled *P. frequentans* WESTLING. No carbon balance sheet was prepared for this species. "My notes place this culture in the *P. spinulosum* or *P. Pfefferianum* series instead of the *P. (Citromyces) glaber* series where my own culture as received from WESTLING many years ago was placed."

Subsection 3. Stricta funiculosa.

None.

Subsection 4. Velutina.

- (i) Ad. 48. Purchased from Baarn in 1925, labelled *P. majusculum* WESTLING. "I find my transfers belong in series with *P. aurantio-violaceum* BIOURGE."
- (ii) Ad. 6. Purchased in 1922 from the British National Collection of Type Cultures, labelled *Citromyces* WEHMER species. Ad. 7. Isolated at Ardeer from an agaric. Ad. 67. Purchased in 1926 from the British National Collection of Type Cultures, labelled *Citromyces* B. WEHMER, Catalogue No. 606. Ad. 68. Purchased from the Centraalbureau at Baarn in 1926, labelled *Citromyces glaber*. Ad. 69. Purchased from the Centraalbureau at Baarn, labelled *Citromyces Pfefferianus*. "Ad. 6 is a monoverticillate, velvety strain with spore chains massed into a column. I place it in the composite series assigned as *P. (Citromyces) glabrum* WEHMER series, in which *P. frequentans* WESTLING and several other forms are also placed. There may be considerable quantitative differences among these forms which shade into each other, both in structure and in reactions produced. Ad. 7 is also in the *P. glabrum* series. Cf. Ad. 6. Ad. 67, Ad. 68 and Ad. 69 also belong to the *P. glabrum* group, as I am using it, or to the *Citromyces glaber* group if you prefer to maintain WEHMER's generic name. There seems to be enough cumulative information available to justify the belief that *Citromyces glaber* falls somewhere in this lot of species and *Citromyces Pfefferianus* in the other lot typified by THOM's *P. spinulosum*, as a form known and hence tangible."

Section II. Monoverticillata-Ramigena.

None.

II. *Asymmetrica.*

Section I. Velutina.

Subsection 1. Velutina-elliptica-magna.

- Ad. 52. Purchased from the Centraalbureau at Baarn in 1925, labelled *P. olivaceum* WEHMER. Ad. 81. Isolated at Ardeer in 1926 from a mouldy orange. Ad. 102. Purchased in 1927 from the American Type Culture Collection, Catalogue No. 1113, labelled *P. digitatum*. "Ad. 52, *P. olivaceum*, is correctly named as the olive-coloured rot of oranges, but the name should be changed to

P. digitatum to comply with the rules. Ad. 81 and Ad. 102, each labelled *P. digitatum*, are satisfactory.”

Subsection 2. Velutina-divaricata.

- (i) Ad. 42. Purchased from Baarn in 1925, labelled *P. intricatum*. “Ad. 42, labelled *P. intricatum*: our colonies and your notes are closer to *P. Steckii* ZALESKI than to our descriptions of *P. intricatum*, whose original was lost many years ago from our collection, or to any of the forms we have recently allocated to the series with *P. intricatum*.”
- (ii) Ad. 23. Received from Mr. F. T. BROOKS of Cambridge, labelled *P. citrinum* THOM. Ad. 95. Purchased in 1927 from the American Collection of Type Cultures, labelled *P. citrinum* THOM, Catalogue No. 1109. Ad. 114. Received from Mr. GALLOWAY, mycologist at the Shirley Institute of the Cotton Research Association, in 1928. It was isolated by him from mildewed cotton and labelled by him *P. aurifluum*. Ad. 23 is the only one of these three species for which a carbon balance sheet has been prepared, but each of the three species is dealt with in Part XIV on the preparation of citrinin. “Ad. 23 varies somewhat in structure from the usual forms of *P. citrinum*, while harmonizing in general reactions with that species, hence we may accept it as *P. citrinum* THOM or some strain near it. Ad. 95 is correctly named as *P. citrinum* THOM. Ad. 114, labelled *P. aurifluum* BIOURGE; in my discussion of BIOURGE’s description of this species I express the opinion that he had my type culture of *P. citrinum* and refused to believe it, because he accepted certain notes of WESTLING as having more weight in determining what I had than my own description. You are right—it is *P. citrinum*.”

Subsection 3. Radiata (P. chrysogenum series).

- (i) Ad. 11. Isolated at Ardeer from mouldy tobacco. Ad. 24. Received from Mr. F. T. BROOKS of Cambridge. Ad. 56. Purchased from Baarn in 1925, labelled *P. citrinum*. “Ad. 11 is *P. chrysogenum* or at least one of the strains in this composite, which may perhaps be called, as BIOURGE calls his whole series, *Radiata* rather than trying to fix a species binomial to one of them. Ad. 24. My cultures of this species indicate one of the *Radiata*, with colours in reverse and substratum which would carry it away some distance from *P. chrysogenum*, however. Ad. 56, labelled *P. citrinum*, is certainly not *P. citrinum* as I understand it in my transfers of your culture, but one of the *Radiata*, i.e., the *P. chrysogenum*–*P. notatum* series.”
- (ii) Ad. 14. Isolated at Ardeer from 3 per cent. sodium azide solution. “Ad. 14 is another of the *Radiata* of BIOURGE. It is perhaps not far from *P. baculatum* WESTLING, but identity to strain is not claimed but rather the use of the name for a number of strains showing the same general variations within the *Radiata*.”

- (iii) Ad. 35. Purchased in 1925 from Baarn. "Ad. 35 is *P. notatum* WESTLING. This is a member of the *P. chrysogenum* series with smaller conidia than *P. chrysogenum* itself."
- (iv) Ad. 53. Purchased from Baarn in 1925, labelled *P. Lagerheimi*. "Ad. 53, labelled *P. Lagerheimi* WESTLING: I was never well satisfied by *P. Lagerheimi*. WESTLING sent this to WESTERDIJK about the same time that he sent it to me, and I have notes as to the organism I received, which do not satisfy this nor does the description. I am inclined to adhere to my previous statement that this species is one of the *Radiata* and is nearer to *P. meleagrinum* than to the name given on the tube."

Subsection 4. Velutina-restricta.

- Ad. 31. Purchased in 1925 from Baarn, labelled *P. puberulum*. "Ad. 31, labelled *P. puberulum*, with the notation ALSBERG and BLACK strain is correctly named."

Subsection 5. Stellata of BIOURGE.

None.

Subsection 6. Velutina-asperula.

None.

Section II. Brevi-compacta.

- Ad. 87. Isolated at Ardeer as a contaminant of a culture of an alga in CZAPEK-DOX solution. "Ad. 87 appears to be a member of BIOURGE's *Hemizonata* or *P. brevi-compactum* series and is near to *P. Biourgeianum* ZALESKI."

Section III. Lanata-typica.

- (i) Ad. 25. Purchased from the British National Collection of Type Cultures, Catalogue No. 602, labelled *P. candidum* LINK. Ad. 49. Purchased from Baarn, labelled *P. Camemberti*, var. *Rogeri* THOM. "Ad. 25 is *P. caseicolum* BAINIER, which is synonymous with *P. Camemberti* var. *Rogeri* of THOM 1911, and with *P. candidum* of MAZÉ and ROGER in the French cheese literature. Ad. 49, labelled *P. Camemberti* var. *Rogeri* THOM = *P. caseicolum* (see Ad. 25) is correctly named." Ad. 34 purchased from Baarn in 1925, labelled *P. Camemberti*. "Ad. 34 is correctly named as *P. Camemberti* THOM."
- (ii) Ad. 46. Purchased from Baarn labelled *P. ochraceum*. "Ad. 46, labelled *P. ochraceum*, appears to be a culture distributed from the BAINIER collection under this name. No description was published by BAINIER, but since the culture had reached various workers under the name, I have continued the name as attributed to BAINIER and added a description."
- (iii) Ad. 12. Isolated at Ardeer from the "sweet waters" of a glycerol still. "Ad. 12 had a series of characters which throw it so far out of harmony with

the scheme of classification in the lanose group that I described it as *P. lanoso-viride* THOM, n.sp., on p. 314 of my new book. It seemed necessary to make a place for this in the scheme of classification so that I have applied this name and designated the culture as 'Type.' "

- (iv) Ad. 33. Purchased from Baarn in 1925, labelled *P. glaucum*. "Ad. 33 is incorrectly named and should be *P. lanosum* WESTLING."
- (v) Ad. 60. Purchased from Baarn in 1925, labelled *P. virescens*. "Ad. 60, labelled *P. virescens*, presumably of BAINIER. BAINIER's report gives the conidia as $2.8\ \mu$ and from his various notes I could not justify identifying a deeply growing floccose or fasciculate form under this name. Ad. 60 is a floccose form, with conidia about $3\ \mu$, in the section *Lanata* (of BIOURGE as amended by me) and with the morphology of *P. lanosum* of WESTLING and the colour of *P. lanosocæruleum* THOM. These species are close together in this group, anyway."

Subsection 2. Lanata-zonata.

- (i) Ad. 82. Isolated at Ardeer in 1926 from mouldy artificial leather cloth. "Ad. 82 is *P. commune* THOM or a nearly related strain."
- (ii) Ad. 19. Isolated at Ardeer from spoiled fuse. "Ad. 19 is apparently *P. fusco-glaucum* BIOURGE."

Section IV. Lanata-divaricata.

- Ad. 32. Purchased from Baarn in 1925, labelled *P. lilacinum*. "Ad. 32 is correctly named as *P. lilacinum*." Ad. 37. Purchased from the British National Collection of Type Cultures in 1925, labelled *P. elongatum*, Catalogue Number 1719, and the BAINIER Collection, No. 444. "Ad. 37 is certainly not *P. elongatum* of the BAINIER Collection but is actually *P. lilacinum* or near it."

Section V. Asymmetrica-funiculosa.

Subsection 1. Funiculosa-divaricata.

- (i) Ad. 55. Purchased from Baarn in 1925, labelled *P. palitans* WESTLING. "Ad. 55 labelled *P. palitans*: my later notes identify this with ZALESKI's *P. Daleæ*." Ad. 116. Purchased from Baarn, labelled *P. lanosum* WESTLING. No carbon balance sheet was prepared for this species, but it is referred to on p. 130 of Part VII as producing kojic acid. "Ad 116 is *P. Daleæ* ZALESKI in quite a different section from *P. lanosum*. I believe that my identification here is more correct than Dr. WESTERDIJK's and that *P. lanosum* may justly be held in a separate group from *P. Daleæ*."
- (ii) Ad. 62. Isolated at Ardeer as a bench contamination. This species was kept because of the unusual salmon-pink reverse on CZAPEK-DOX medium. "Ad. 62 is one of the section including *P. intricatum* and is nearest to *P. Godlewskii* of ZALESKI."

Subsection 2. Funiculosa-typica.

- (i) Ad. 22 received from Mr. F. T. BROOKS of Cambridge, labelled *P. viridicatum*.
 “Ad. 22. Here my record is not very satisfactory. You are doubtless correct in turning down the first allocation. A later note of mine assigns it to a series with *P. psittacinum* THOM into which I finally put the organism I received from BIOURGE under the name *P. aureum* CORDA, which I could in no way accept as correctly named. In colour and initial habit these colonies do suggest *P. viridicatum* as indicated in my first letter.”
- (ii) Ad. 8. Isolated at Ardeer in 1922 as a bench contamination. Ad. 4. Received via Cambridge, labelled *P. glaucum* (cake) and distributed in the first place by the British National Collection of Type Cultures, Catalogue No. 764. Ad. 5 received via Cambridge, labelled “*Penicillium* from tan liquor” and bearing the British National Collection Catalogue No. 1162. Ad. 54. Purchased from Baarn in 1925, labelled *P. patulum*, BAINIER. Ad. 18. Isolated at Ardeer from milk in which it produced a yellow colour with the formation of masses of crystals. Ad. 50. Purchased from Baarn, labelled *P. granulatum*. Ad. 59. Purchased from Baarn in 1925, labelled *P. baculatum*. Ad. 9. Isolated at Ardeer in 1922 from cheese. “I have placed Nos. Ad. 8, Ad. 4, Ad. 5, Ad. 54, Ad. 18, Ad. 50, Ad. 59 and Ad. 9, together with certain forms which I have encountered here, and covered them by the name *P. terrestre* JENSEN series, which amounts to digging up JENSEN’s name for a soil series of *Penicillium* and applying it to this group of organisms, which have certain fundamental characteristics in harmony and minor differences in general appearance.”

*Section VI. Fasciculata.**Subsection 1. Sclerotigena.*

- (i) Ad. 65. Received from Mr. F. T. BROOKS of Cambridge, labelled *Penicillium B.*, isolated from and pathogenic on gladioli culms. “Ad. 65 is *P. gladioli* MACHACEK. The same name was published independently by McCULLOCH and THOM but later in date.”
- (ii) Ad. 84. Isolated at Ardeer in 1926 from a mouldy orange. Ad. 85. Isolated at Ardeer in 1926 from a mouldy orange. Ad. 86. Isolated at Ardeer in 1926 from a mouldy orange. No carbon balance sheet was prepared for Ad. 86. “Ad. 84, Ad. 85 and Ad. 86 appear to be *P. italicum*.”

Subsection 2. Aeruginosa.

None.

Subsection 3. Viridicata.

- (i) Ad. 15. Isolated at Ardeer from a very acid cellulose fermentation, having a pH of 1–2. “Ad. 15 is a member of the *P. viridicatum* group, a composite of

many variants about another group of characteristics. It is perhaps more nearly placed with *P. verrucosum* DIERCKX (according to BIOURGE) than with WESTLING'S *P. viridicatum*."

- (ii) Ad. 76. Isolated at Ardeer from mouldy artificial leather cloth. Ad. 77. Isolated at Ardeer from the cooling water of a glycerol still. Ad. 83. Isolated at Ardeer from artificial leather cloth. Ad. 77 and 83 were not sent to Dr. THOM but we believe them to be very closely related to Ad. 76. "Ad. 76 is a member of the series *P. viridicatum*. Whether placing *P. viridicatum* and *P. verrucosum* (see Ad. 15) in a series has more than arbitrary value based upon superficial characters is left open in my own mind. They were put together as having fasciculation, zonation, and certain related shades of colour and habit. We have not made a quantitative study of them."

Subsection 4. Glauca.

Series Crustaceum. Ad. 16. Isolated at Ardeer from a lemon. "Ad. 16: by our records we had to purify the culture received but selected as the organism probably indicated, a gray-green, faintly zonate form, showing slight fasciculation at the growing margin and forming great *crusts* of conidia. For lack of a better name I have made this another *type* which I have called *P. crustosum* THOM (n. sp.). It is described on p. 399 of my book."

Series Restrictum.

None.

Series Expansum.

Ad. 1. Purchased from the British National Collection, labelled *P. expansum* LINK, Catalogue No. 593, THOM and CHURCH, Washington 4189. Ad. 58. Purchased from Baarn in 1925, labelled *P. biforme*. "Ad. 1 is probably correct to the series—*P. expansum*, but exactly which one of the series is less definite. Ad. 58, labelled *P. biforme*; our transfers show not a floccose form but a fasciculate species in the great series with *P. expansum*, perhaps as a strain near *P. elongatum* of DIERCKX."

Series Italicum. (See above.)

Series—p. 416 in THOM'S '*Penicillia*.'

Ad. 51. Purchased from Baarn in 1925, labelled *P. Schneggii* BOAS. "Ad. 51, *P. Schneggii*, BOAS: I think this probably represents BOAS' material." This culture is described on p. 417 in THOM'S book.

Series—Urticæ-patulum.

None.

Subsection 5. Coremiella.

Ad. 61. Purchased from Baarn in 1925, labelled *P. corymbiferum* WESTLING. Ad. 64. Received from Mr. F. T. BROOKS, labelled *Penicillium A*. Isolated from and pathogenic to narcissus bulbs. "Ad. 61: *P. corymbiferum*. Ad. 64, labelled *P. corymbiferum*; my transfer of this when first received was so complete a reproduction of the description, my notes, and my memory of the strain WESTLING sent me, that I marked it with the name and moved the discussion of it in the book to suit the new data obtained from a species not before seen for 15 years."

Subsection 6. Coremium.

None.

*III. Biverticillata-symmetrica.**Section I. Ascogena.*

- (i) Ad. 39. Purchased from the British National Collection, labelled *P. avellaneum*, Washington 4010.5, British Catalogue No. 984. "Ad. 39, *P. avellaneum* THOM and TURESSON: this culture is apparently correctly named."
- (ii) Ad. 20. Isolated at Ardeer from mouldy tobacco. "Ad. 20: so far I find the sulphur-yellow bodies (sclerotia) which you note in your record and have not been able to get ascospores out of them. This species falls nearer to *P. Kiliense* of WEIDEMANN than any other described form. Since WEIDEMANN's species were never available to anyone else, perhaps we may use the name legitimately since the rest of the data did not go far astray."
- (iii) Ad. 101. Purchased in 1927 from the American National Collection, labelled *P. spiculisporum* LEHMAN, Catalogue No. 1136. "Ad. 101 is probably correct as *P. spiculisporum*."

Section II. Coremigena.

Ad. 63. Purchased from the British National Collection, labelled *P. Duclauxi*, Washington 20, British Catalogue No. 587. Ad. 75. Isolated at Ardeer from sand. "Ad. 63 is correctly named as *P. Duclauxi* DELACROIX. This goes back to a culture received from DELACROIX himself just before his death. Ad. 75 is correctly named as *P. Duclauxi*."

*Section III. Luteo-virida.**Subsection IIIa. Funiculosa.*

- (i) *Luteo-viride-pinophilum* Series.—Ad. 41. Purchased in 1925 from the British Collection, labelled *P. pinophilum* HEDGCOCK. THOM and CHURCH, Washington, British Catalogue No. 1151. "Ad. 41 is correctly named as *P. pinophilum*."
- (ii) *P. funiculosum* Series.—None.
- (iii) *P. Herquei* Series.—Ad. 43. Purchased from Baarn in 1925, labelled *P. Herquei* BAINIER and SARTORY. "Ad. 43 is correctly named as *P. Herquei*."

Subsection IIIb. Luteo-purpurogena.

- (i) *P. rugulosum* Series.—Ad. 27. Purchased from the British National Collection in 1925, labelled *P. rugulosum* THOM, Catalogue No. 592, THOM and CHURCH, Washington 46. “Ad. 27, labelled *P. rugulosum* THOM: this is certainly a strain in the series; whether it is the original No. 46 or not looks doubtful, but let it stand.”
- (ii) *P. purpurogenum* Series.—Ad. 36. Purchased in 1925 from the British National Collection, labelled *P. purpurogenum* FLEROFF, Catalogue No. 586, Washington 17. “Ad. 36 is *P. purpurogenum* STOLL, or FLEROFF-STOLL if you prefer.”
- (iii) *P. luteum* Series (Non-ascosporic).—Ad. 30. Purchased from Baarn in 1925, labelled *P. luteum* ZUKAL. “Ad. 30 is apparently a member of the *P. luteum* group. In this case we also run up against a peculiar history, as you know. The original culture which I reported as *P. luteum*, No. 11, has been maintained for twenty years as an ascosporic form received from Prof. THAXTER, carried to Prof. WEHMER, labelled and agreed to by him as this species. The validity of this species is attacked by DERX and BOURGE. Several times in the period during which I have kept it in culture it has separated into two lines, one of which is pale in colour, very little yellow either above or below, and produces no ascospores. This form harmonizes with Ad. 30 as I have received it. This strain would, in a way, satisfy DERX’ contention that ascosporic forms in this series are produced by the conjugation of two strains which are separately non-ascosporic.”

Section IV. Biverticillata miscellanea.

- Ad. 45. Purchased from Baarn in 1925, labelled *P. vesiculosum* BAINIER. “Ad. 45, labelled *P. vesiculosum* BAINIER: though where it got the name I cannot say. I believe it to be identified correctly with *P. elongatum* BAINIER, but since that name was applied several years earlier by DIERCKX to a very different organism, some change had to be made. Hence, since it grows very slightly and scantily in certain media, I named it in my book as *P. tardum* THOM (see p. 486).”
- Ad. 47. Purchased from Baarn, labelled *P. claviforme* BAINIER. “Ad. 47 is actually another strain of *P. tardum* as in Ad. 45. There are several strains of this lot, some of which grow much more readily and profusely than the type.”

IV. Polyverticillata-symmetrica.

None.

Genus *Gliocladium* CORDA

- Ad. 38. Purchased in 1925 from the British National Collection, labelled *P. roseum* PAINE, Catalogue No. 1290. “Ad. 38: we could not get our transfers of this

mould to produce conidia, so that we do not know whether it has degenerated or what is the explanation. The general habit of the colony was about that of the *P. roseum* or *Gliocladium roseum* lot for forms."

Genus *Scopulariopsis* BAINIER.

- Ad. 40. Purchased from the British National Collection, labelled *P. brevicaule* SACCARDO, Catalogue No. 580, Washington 2. "Ad. 40, labelled *P. brevicaule*, is certainly one of the lot." Ad. 70. Purchased from PRIBRAM of Vienna in 1926, labelled *Citromyces* B. WEHMER. Ad. 72. Purchased in 1926 from PRIBRAM of Vienna, labelled *Citromyces citricus* I WEHMER. "Ad. 70 is some variety of *P. brevicaule*, or better, *Scopulariopsis*. Ad. 72 is another *Scopulariopsis* (*P. brevicaule*). My comment at this point is that your note indicates that you purchased them from PRIBRAM. I bought those same cultures and they were nearly all contaminated."

Genus *Pæcilomyces* BAINIER.

- Ad. 44. Purchased from Baarn in 1925, labelled *P. divaricatum*. "Ad. 44 is correctly named as *P. divaricatum* THOM = *Pæcilomyces varioti* BAINIER. or very nearly so."

Unnamed *Penicillium* Species.

- Ad. 3. Received from Cambridge and is supposed to be British National Collection Culture No. 589, labelled *P. chrysogenum* THOM, Washington 26. "Ad. 3, labelled *P. chrysogenum*, is either a degenerate or an entire or almost complete replacement of *P. chrysogenum* with a white sterile form."
- Ad. 57. Purchased from Baarn in 1925, labelled *P. variabile* WEHMER. "Ad. 57, labelled *P. variabile*, is the same kind of culture in our transfers as Ad. 3. It is a broadly spreading white organism with a few green fruits about the margin." THOM says on p. 411 of his book on the *Penicillia*: "Cultures received under the name (*P. variabile*) from certain other German sources in 1924-1926 have been races of *P. chrysogenum*, hence the substitution of this organism for WEHMER's species has become complete in certain laboratories." The history of Ad. 3 and Ad. 57 is thus particularly interesting.
-