The secretion granules observed in thyroid sections correspond in every respect to the granules staining with Neutral Red. The first neutral red granules were found in thyroids in which the differentiation of the solid cell column into primary follicles had just started. During the larval period the granules are spread throughout the cell, but are especially dense at the apical pole. In several larvae which were close to metamorphosis the granules showed a tendency to become massed at the apical pole; no granules at all were present at the basal cell end. Although colloid is excreted from the cells into the lumen of the follicles throughout the larval period, an excretion of the granules into the follicular lumen has never been noticed; no granules whatsoever could be detected in the colloid. Moreover, a careful comparison made, in the vitally stained larvae, between the granules of the thyroid cells and the true secretion granules (the mucine granules) of the Leydig cells of the skin showed that there is no resemblance between the reactions of these two kinds of granules towards the Neutral Red.

Although the study of the living thyroid gland, as compared to the histological study, so far has not disclosed any new facts, it has at least been instrumental in demonstrating that the Anderson vacuoles and the colloid vacuoles are not artefacts, but are structures characteristic of the living thyroid gland. Furthermore, it seems to be certain that the so-called secretion granules of the thyroid cells are not actually excreted from the cells.

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A POTATO NECROSIS RESULTING FROM CROSS-INOCULATION BETWEEN APPARENTLY HEALTHY POTATO PLANTS

WHILE conducting investigations on the manifestation of virus disease symptoms on different potato varieties and seedlings[1] in the Washington greenhouses during the winter of 1923–24, the writer found a necrosis on certain seedlings. The symptoms of these necrotic or streaked seedlings resembled those of so-called "streak" in potato. This malady is distinguished in the early stages by necrotic spots on the leaf parenchyma; later, necrosis appears along the veins, producing a streaked appearance. Likewise, linear necrotic lesions appear on the petioles and stems, usually resulting in the death of the shoot in a short time; shoots from four to ten centimeters above ground may die in a few days. Frequently only one side of the shoot or even of a compound leaf manifests these symptoms. Necrotic areas may develop on very young actively growing shoots and leaves, as well as on apparently full-grown plants. These facts suggest that the inciting agent is transmitted through the conducting elements.

Necrosis developed on certain seedlings as a result of tuber grafts on mild mosaic and spindle tuber Green Mountains. Other seedlings from different parentage and other varieties treated similarly at this time manifested only mild mosaic and spindle tuber symptoms. All the healthy controls from seed pieces from the same tubers as the grafted seed pieces remained healthy. Also the mosaic and spindle tuber Green Mountain plants in these grafts disclosed only mosaic and spindle tuber.

Similar necrosis again developed on the same seedlings and on an additional seedling when these investigations were continued in the fall of 1924 under the same conditions as before. At this time studies also were initiated on the reaction of some apparently healthy foreign potato varieties, *viz.*, Duke of York, Bravo, Paul Kruger, Koksiaan[2] and Arran Comrade,[3] to the mosaic, leaf roll and spindle tuber diseases in Green Mountains. On these foreign varieties necrosis, as on the seedlings, developed when grafted on mosaic, spindle tuber and leaf roll Green Mountains. Some of the shoots became necrotic when but a few centimeters above ground, without manifesting the symptoms of the particular disease represented in the Green Mountains. Other shoots plainly disclosed either mosaic, leaf roll or spindle tuber. The controls, plants from the seed pieces from the same tuber as the grafted seed pieces, remained healthy. Likewise, no necrosis appeared on the mild mosaic, spindle tuber or leaf roll Green Mountains. In a similar series of mild mosaic Green Mountain tuber grafts on healthy Green Mountains, Rural New Yorkers, Irish Cobblers, Spaulding Rose, Early Rose and Bliss Triumphs, no necrotic symptoms developed.

From these peculiar manifestations and in view of Professor James Johnson's[4] recent discovery of faint mottling or irregular necrotic areas produced on tobacco by cross-inoculations with juice from apparently healthy potatoes, it was surmised that this necrosis might be due to the reaction between certain

[1] Potato seedlings were furnished through the courtesy of Dr. C. F. Clark, Bureau of Plant Industry, U. S. Department of Agriculture.

[2] Obtained through the courtesy of Dr. H. M. Quanjer, Wageningen, Holland.

[3] Obtained through the courtesy of Dr. George H. Pethybridge, Harpenden, England.

[4] Johnson, James, "A virus from potato transmissible to tobacco," *Phytopathology*, V. 15, No. 1, p. 46–47. 1925.

apparently healthy potato varieties. Accordingly, tuber grafts between apparently healthy Green Mountain and healthy Duke of York and Paul Kruger, and between healthy Bliss Triumph and healthy Paul Kruger varieties were made. Necrosis developed only on Duke of York and Paul Kruger within thirty days after grafting and planting. Some shoots developed necrotic symptoms after appearing but a few centimeters above the soil; others did not manifest necrosis until thirty or more centimeters tall.

In like manner scions from apparently healthy Green Mountains on healthy Paul Kruger and Bravo have produced necrosis in the axillary shoots of the stock. Healthy Paul Kruger and Bravo scions on healthy Green Mountains resulted in necrosis on the scions only.

Necrosis also developed from juice inoculations by means of leaf mutilation between apparently healthy Green Mountains and the susceptible apparently healthy potato varieties and seedlings.[5] Likewise, tuber grafts between apparently healthy Irish Cobbler, Russett Rural New Yorker, Rose 4, Bliss Triumph and certain potato seedlings resulted in necrosis on the seedlings only. Juice inoculations from such necrotic seedlings on apparently healthy seedlings resulted in necrosis on the inoculated seedlings. The controls in each case remained healthy.

No mottling as described by Johnson[6] in his cross-inoculations between healthy potato and tobacco has been observed in these inoculations between apparently healthy potato varieties. Although these observations appear very similar in other respects, they differ mainly from Johnson's results in that here we have a similar reaction resulting from transmission of juice between apparently healthy plants in the same species.

Experience with virus diseases in plants as well as with certain animal diseases has disclosed that certain individuals may act as symptomless carriers of the infecting agent. It is probable that such a condition obtains here. With this suggestion it appears necessary to assume that the necrosis in question is not the same as the so-called "streak" which it closely resembles, since evidence has shown that the Green Mountain as well as other American varieties used in this investigation is susceptible to this malady.

A more detailed account of this investigation will be presented in a later paper.

E. S. SCHULTZ

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[5] Seedlings as used in this paper includes plans from potato tubers originated from potato seed several years ago.

[6] *Loc. cit.*

FINANCIAL REPORT OF THE PACIFIC DIVISION OF THE AMERICAN ASSOCIATION

FINANCIAL REPORT OF THE SECRETARY-TREASURER FOR THE NINE-MONTH PERIOD ENDING SEPTEMBER 30, 1925

January 1, 1925, Cash Balance		$1,863.35
Receipts:		
Received from the Permanent Secretary's Office	$671.00	
Affiliated societies	135.00	
Dues and fees	275.00	1,081.00
		$2,944.35
Expenditures:		
Dues remitted to Permanent Secretary's Office	$155.00	
Supplies	16.24	
Postage and express	25.42	
Salary	675.00	
Telephone and telegraph	11.36	
Expense, general	15.66	
Expense, travel	88.41	
Office assistance	225.00	
Membership campaign	16.75	1,228.84
October 1, 1925, Cash Balance		$1,715.51

BALANCE SHEET, SEPTEMBER 30, 1925

Assets

Equipment	$ 253.37
Cash on hand	1,715.51
	$1,968.88

Liabilities

Permanent Secretary's Office	$1,615.51
Investment	253.37
Sundry creditors	100.00
	$1,968.88

SUMMARY OF DISBURSEMENTS FOR THE NINE-MONTH PERIOD ENDED SEPTEMBER 30, 1925

Supplies	$ 16.24	
Salary	675.00	
Office assistance	225.00	
Postage and express	25.42	
Telephone and telegraph	11.36	
Expense, general	15.66	
Expense, travel	88.41	
Membership campaign	16.75	1,073.84
These disbursements have been made from funds derived as follows:		
Affiliated societies	$135.00	
Initiation fees	120.00	
Balance from Permanent Secretary's Office (Membership dues)	818.84	$1,073.84

W. W. SARGEANT,
Secretary-Treasurer