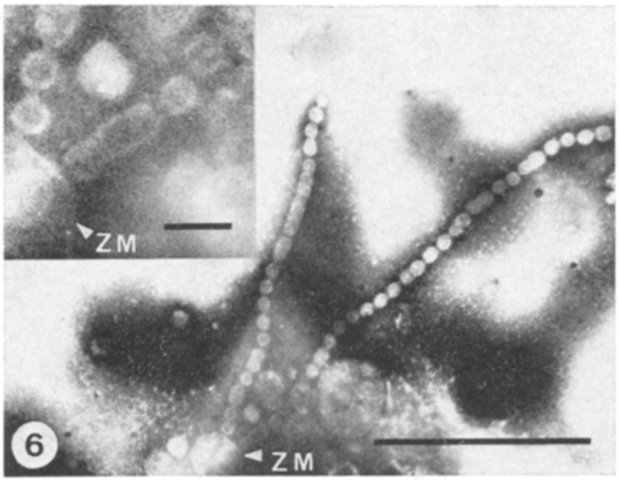

Fig. 6. Influenza A-PR8, Eipassage. Ausschleusen von sphärischen Partikeln (ZM = Zellmembran). × 28000 (Marke: 1 μm). Inset: gleiche Stelle der Zellmembran mit frisch gebildeten Viren bei höherer Vergrösserung. × 85000 (Marke: 100 nm).

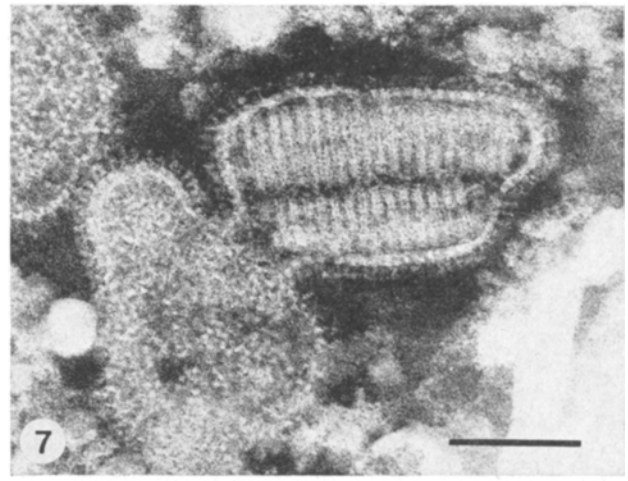

Fig. 7. Influenzavirus A_2, Eipassage. Darstellung von 2 nebeneinanderliegenden Nukeoproteinspiralen in der gleichen Hülle. × 170000 (Marke: 100 nm).

Virus durchlässig geworden und das Kontrastiermittel in das Virion eingedrungen ist. Dabei zeigt sich die doppelte Nukleoproteinspirale mit einer Ganghöhe von ca. 100 Å, einer Breite der Nukleoproteinfäden von 60 Å und einem Durchmesser der Gesamthelix von 600 Å, was mit den Werten aus der Literatur[6, 9, 13, 14] gut übereinstimmt.

Diskussion. Diese Untersuchungen an Influenza A_2, dem Erreger der «Hongkong-Grippe» bestätigen die Befunde aus der Literatur, welche an früheren Influenzavirusstämmen erhoben wurden hinsichtlich der Grösse, Form[3–6, 8, 9, 15] und Oberflächenbeschaffenheit[7, 27] der Virionen. Auch der Aufbau der informationstragenden RNS, einer Nukleoproteinhelix respektive -doppelhelix stimmt mit dem in der Literatur angegebenen überein[6, 9, 13, 14].

Die Gründe, weshalb Influenzavirus einmal filamentös und ein andermal sphärisch erscheint, sind nicht ganz klar. Einerseits scheinen genetische Faktoren die Erscheinungsform beeinflussen zu können[21], andererseits scheinen auch Faktoren an der Zelloberfläche verantwortlich zu sein. Dass aber nicht nur die Zelloberfläche als solche verantwortlich ist, sondern auch die umgebende Flüssigkeit, welche ja aus technischen Gründen je nach Zell- und Kulturart wechselt, geht auch aus den Arbeiten von Blough[23, 24] hervor. Eine experimentelle Klärung dieser Frage steht zurzeit noch aus.

Die hier gezeigte Figur 6 macht aber wahrscheinlich, dass vor allem das *Milieu*, in dem die Wirtszelle sich aufhält, ausschlaggebend ist, indem vermutet werden kann, dass sowohl bei sphärischen als auch bei filamentösen Viruspartikeln der Entstehungsmechanismus der gleiche ist, dass aber je nach Medium die Viren sich entweder als Filament mit sehr langer, sich in bezug auf Information mehrfach wiederholender Nukleoproteinhelix formieren oder aber gleich nach der Entstehung in die kleinsten infektiösen Einheiten zerfallen, entsprechend der minimal nötigen RNS-Menge, nämlich ca. 6 Umgänge der Nukleoproteinspirale[6], welche die vollständige Information für die Neusynthese des Virus enthält.

Summary. The morphology and internal structure of Influenza A_2 ('Hongkong') virus is described. This virus has the same morphological characteristics as previously isolated Influenza A_0, A_1, and A_2 strains. Evidence is also presented that this influenza virus appears in a filamentous form in human throat washings. The reasons for the virus to be a filamentous or a spherical particle are discussed.

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Aphanomyces Root Rot of Cauliflower in Varanasi, a New Recording for India

During surveys, a partial wilt of cauliflower (*Brassica oleracea* L. var. *botrytis*) plants was encountered in Varanasi, Uttar Pradesh during September–October in early transplanted crops in intensively cultivated fields. The disease appears with a few sickly plants in scattered pockets in water-logged areas. Infected plants remain stunted with limpy, partially withering leaves due to loss in turgor and chlorophyll faded to a lighter shade. The infection starts from the rootlets and root tips of young plants; the cortical tissues become water-soaked and soft as the infection progresses upward in the mesocotyl. The root bark discolors to dull brownish, sloughs into shreds and separates from the vascular strand. The rootlets get detached from the main tap root on pulling the plant out and the sloughed bark separates in the soil. Infected plants do not recover from the wilt and are attacked by weakly parasitic organisms, leading to ultimate death. Nearly 10% of plants are infected in most of the fields with partially water-logged and poorly aerated, sandy clayey soils.

The cortical tissues show abundant development of pale yellowish brown, thickwalled, subsphaerical oospore-like bodies and intercellular, coenocytic hyphae of a phycomycetous parasite. The oogonia contain single eggs developing single oospores. Diseased tissues bearing the oospores were surface-sterilized and incubated for 2 days under moisture at room temperature (26 °C). A bit of growth was transferred to petri plates containing sterile distilled water and boiled hemp seed with extruded mucilage.

The mycelium was glassy translucent, coenocytic and branched; young branches became terminally sporogenous with no distinction from the vegetative hyphae. Slender tubular zoosporangia containing single rows of zoospores appeared in various stages of zoosporogenesis followed by exit of zoospores and their amassing in quiscence above the orifice. Secondary zoospores were ovate to reniform, laterally biflagellate showing a single period of motility. These indicate typical characters of a species of *Aphanomyces* de Bary in the Saprolegniales.

Few species of the genus *Aphanomyces* have been reported to be parasitic on crop plants from different world regions[1,2]. *Aphanomyces euliches* Drechsler was found parasitic in the roots of several other host plants[3]. Damping-off and tip rot of sugar beets and other crop hosts are incited by *A. cochlioides* Drechsler[4,5]. KENDRICK[6] reported another species, *Aphanomyces raphani* Kendrick inciting black root of radish in Indiana (USA). The pathogenic species under study is tentatively identified as *A. raphani*. Distribution of this parasite appears limited and this report is perhaps the only one besides the type locality. The root rot disease and the pathogen hitherto unreported from India, and perhaps from any Asiatic country, may be a serious menace to cauliflower cultivation in view of its gradual spread.

Zusammenfassung. Eine Pilzinfektion der Blumenkohlwurzeln (*Brassica oleracea* var. *botrytis*) wird beschrieben. Als Urheber der Krankheit wird der pathogene Pilz *Aphanomyces raphani* Kendrick vermutet. Das Auftreten der Krankheit und ihres Erregers stellt für Indien und eventuell auch für andere asiatische Länder eine Neuentdeckung dar.

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The Relationship Between the Orientation of the Early Chick Embryo and the Shape of the Egg Shell

The alignment of an avian embryo in the early stage of development can to a certain extent be predicted on the basis of VON BAER's rule[1]. According to this rule when the egg is placed with the blunt end to the left, the cephalo-caudal axis is perpendicular to the long axis of the shell and the head of the embryo is directed forwards. Although in all the species examined this type of orientation predominates, a considerable intraspecific as well as interspecific variation is observed.

CLAVERT[2–4], CLAVERT and VINTEMBERGER[5–8] demonstrated experimentally that the factor determining the bilateral symmetry of the blastoderm and the alignment of the embryo is the position of the egg in the uterus during rotations to which the egg is submitted under the influence of the uterine muscles. If the long axis of the shell is parallel to the axis of the uterus and the egg faces cloaca with its sharp end, the direction of the embryonic axis will be concordant with VON BAER's rule. The period when the position of the embryo is being determined is called 'a critical phase' and corresponds in time to the formation of area pellucida. In species more closely obeying VON BAER's rule (hen, pigeon, quail) the egg remains relatively stable during this period; it rotates about its long axis, but rarely rotates about the short axis. The behaviour of the duck egg in the uterus is quite different; X-ray photographs of CLAVERT[3] demonstrate clearly that the egg alters its position several times. The consequence of this 'instability' is a more even distribution of alignments of embryos and the relatively small percentage of embryos strictly obeying VON BAER's rule. It must also be added that in the non-incubated duck blastoderm the embryonic axis is not yet irreversibly determined, and its course can be experimentally altered by a mechanical factor, such as transection of the blastoderm (ROGULSKA[9]).

In the light of observations of CLAVERT and VINTEMBERGER, it occurred to us that one of the factors defining the behaviour of the egg in the uterus, and in consequence the orientation of the embryo, may be the shape of the shell. According to this assumption, the degree of stability of the egg would increase with the elongation of the shell, which in turn would increase the number of embryos directed towards '12' of a hypothetical clock face. Conversely, more rounded eggs would have a greater tendency to various rotations, thus leading to a greater variability in the orientation of embryos. In order to check the correctness of this hypothesis, observations were made on the orientation of chick embryos in relation to the shape of the shell.

The material consisted of 389 eggs of the Rhode Island strain. In view of the relatively rare occurrence of particularly elongated or rounded eggs part of the material was specially selected for these characteristics. The long and short axes of the shell were measured with accuracy

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