

characteristic estrogen-induced rise in vascular permeability⁴ (*vs.* control, $P < 0.01$), but also reduced it drastically (*vs.* control or estrone, $P < 0.01$, Table III). However, norgestrel

TABLE III

Effect of norgestrel on uterine vascular permeability of rats pretreated with estrone

Treatment		$\mu\text{g. trypan blue}/100 \text{ mg. uterine tissue}$
Control	..	6.41 ± 0.65 (9)
Estrone	.. (6 hr.)	9.00 ± 0.87 (8)*
Estrone	(6 hr.)	
+		
Norgestrel	(3 hr.)	1.96 ± 0.21 (5)
Estrone	(6 hr.)	
+		
Norgestrel	(6 hr.)	3.22 ± 0.17 (6)

* Mean \pm S.E. with number of animals in parentheses.

given 3 hr. before sacrifice to estrogenised animals seemed to exert a more profound antipermeability effect than when administered concurrently with estrone ($P < 0.01$). Thus a dose of $0.3 \mu\text{g.}$ norgestrel was sufficient to nullify the stimulatory effect of $1 \mu\text{g.}$ estrone, and at the same time to exert its intrinsic inhibitory influence on the uterine vascular permeability.

It thus appears that the potent antipermeability effect of norgestrel is crucially involved in its contraceptive *modus operandi*, conceivably by depriving the uterus of some of the essential substrates and co-factors which may be needed for growth, differentiation and nidation of the blastocyst, as well as for the sustenance of pregnancy.

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FORMATION OF SUPERNUMERARY SURFACE LAYERS IN RADIATED AMOEBAE

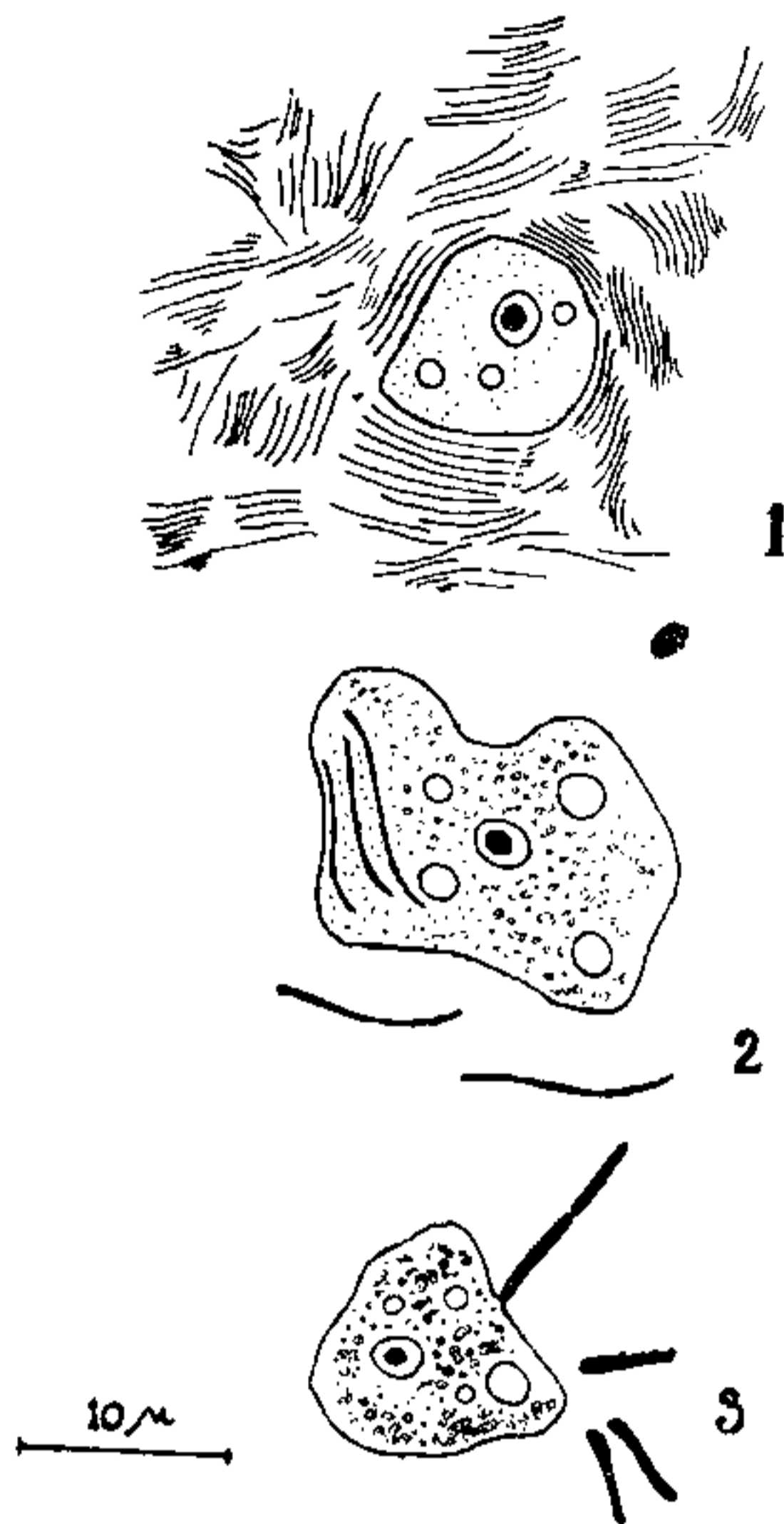
A SPECTACULAR peeling off of the surface layer has been observed from the radiated soil amoeba—*Acanthamoeba* sp. This process of denuding of the surface layer has been observed in a variety of dosages employed. The most significant effect, however, has been seen in the irradiated amoebae, in the 3rd subculture of 125,000, 150,000 and 175,000 rads and in the 2nd subculture of 200,000 rads. For irradiation upto 1,500 rads, a Picker's Army Field X-ray unit was used at 70 KVP; 4 mA; 555 rads/min. with 0.25 mm. Al-filter. A water-cooled Muller's MG-150 X-ray machine was used for the doses 2,000 rads and above, operated at 80 KVP; 9 mA; 4,000 rads/min. (for further details see Chatterjee¹).

The denudated surface layers were arranged concentrically around the amoebae (Fig. 1). After peeling off of the surface layers amoebae never remained naked because continuously new surfaces were formed within the cell body to replace the previously shredded off limiting membrane. Layer after layer of new surface materials were being continuously formed and periodically thrown out. They appeared as concentric layers surrounding the amoebae, filling up quite a portion encircling the cell body. Such amoebae were immobilised and firmly attached to the glass surface. In the following few subcultures the incidence of peeling off of the surface layers became infrequent and finally disappeared in the onward subcultures.

At lower dosages, *viz.*, between 50–15,000 rads, no detachment of the surface materials as distinct layers was visible. From the 3rd subculture, localised areas were found where supernumerary depositions of membrane were noticed inside the cell (Fig. 2). These areas of isolated patches of extra surface membrane might be present in some particular region of the cell. These could be thrown out and discarded. This phenomenon of production of extra surface material was continued for 6th and 7th subcultures. The size of the peeled off surface became gradually smaller before their final disappearance in the further culture. Often the ejected surface areas appeared as stiff rod-like bodies projecting out from the cell having a dense mass (Fig. 3). Their length varied from 3–15 $m\mu$, or even more. Sometimes, the lifted surface material from the cytoplasm were fragmented into a number of still smaller

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portions before their final elimination from the cell.



FIGS. 1-3

The peeling off of the surface layer suggested overproduction of surface-forming material induced as an after-effect of irradiation. In normal amoebæ such a phenomenon has never been seen. Overproduction of cell surface in radiated amoebæ can be taken as an induced phenomenon of a concerned activity of synthesis. It is still interesting to note that such overproduction can take place only during the active phase of trophic life of the amoeba and not during the inactive phase of the cystic life (Mookerjee and Hajra²). It must be pointed out in this connection that whenever the trophic forms were mobilising in the excessive production of their surface layers, they invariably failed to undergo regular binary fissions and resulting into scanty culture.

Claims have already been made that a process of active synthesis goes on near the surface layer which results in the constant replacement of the previous limiting membrane. Bell³ and Wolpert *et al.*⁴ have suggested that the membrane may be synthesized *in situ* by enzymatic sites forming part of the membrane itself, particularly as the internal membranes of the cell have many synthetic functions. Radiation seems to stimulate this synthetic activity in the treated amoeba. The theory is

that the amoeba renews its surface each time when it passes through its own length (Goldacre^{5,6}). This view speaks of an ephemeral nature of the surface layer which is continually being formed to be replaced. Weiss⁷ and Rosenberg⁸ have advanced the idea that the cell surface is constituted by the staggering of many monolayers of protein films which are constantly shed as the cell mobilizes itself in movement. In the present set-up, the radiated amoebæ were attached on the glass surface and became imprisoned in a state of immobilisation and the active formation of layers are staggered around the cell body as distinct elements.

Another impressive case of the present result is to show that the surface is a definite structure distinguishable from the rest of the cytoplasm. This lends support to the other experiments where lifting and separation of surface layer were done by immersing the amoebæ in Alcian blue Nachmias⁹ at 5° C., though it is not yet clear whether in this case only the polysaccharide part or the protein part is also lifted. Preliminary cytochemical tests which were carried out showed that the protruded cell surfaces gave RNP and alkaline phosphatase positive reaction but failed to do so when they were detached from the cell body of amoebæ.

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USE OF CONGLUTINATING COMPLEMENT ABSORPTION TEST FOR RAPID IDENTIFICATION OF ARBOVIRUSES

THE conglutinating complement absorption (CCA) test has been used in the sero-diagnosis of arboviruses. The test was found to be more sensitive than the ordinary hæmolytic complement fixation (CF) test in detecting the presence of arbovirus antibodies in serum.^{1,2}