NUCLEAR INCLUSIONS IN THE TESTICLES OF MONKEYS INJECTED WITH THE TISSUE OF HUMAN VARICELLA LESIONS.

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PLATES 5 AND 6.

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Some reasons for studying chicken-pox together with a review of the literature concerning the attempted experimental production of the disease in animals have been given in a previous paper (1). Recently several papers have appeared in support of the view that there is a close relation between chicken-pox and herpes zoster (2) on the one hand and between herpes zoster and herpes simplex (3) on the other. From Doerr's (4) comprehensive review of the literature concerning these diseases one concludes that the proof of the identity of the three or of any two of them is inadequate. Furthermore, it is doubtful if more than one, herpes simplex, has been experimentally produced in animals. Therefore, to solve many of the problems arising in connection with these diseases, it is desirable to establish the other two in animals and this I have attempted to do with varicella.

Early in the work attempts were made to infect monkeys with the virus of chicken-pox. Only Indian macaques were employed and no positive results were obtained. Meantime a filterable virus was discovered during attempts to transmit varicella to rabbits (1). At first this virus (Virus III) was thought to be the etiological agent of chicken-pox. Subsequent work (5), however, in my laboratory and also in Swift's (6) disclosed the fact that Virus III is not the cause of varicella but is indigenous to rabbits. Following this disclosure, the use of monkeys in the experimental study of chicken-pox was resumed and it is with some results of the work that the present paper deals.

Methods and Materials.

Monkeys Employed.—It is well known that species of monkeys vary in susceptibility to certain diseases. Therefore, in addition to Indian macaques (*Macacus rhesus*), African vervets (*Cercopithecus lalandi*) and South American ringtail monkeys (genus *Cebus*) and marmosets (*Hapale jacchus*) were employed. 10 monkeys were inoculated, all of which were young; in none, with the exception of the marmoset, had spermatogenesis been established.

Other Animals.—In addition to the monkeys, 2 rabbits, 1 guinea pig, 1 white rat, and 3 chickens were used.

Inoculations.—Blood, vesicle fluid, and emulsified papules and vesicles collected from patients with varicella, usually during the first 48 hours of the disease, were used for inoculation. Pieces of skin from a normal volunteer were used as a control. The blood was collected and injected before clotting occurred. The fluid from vesicles, to which were added scrapings from the floor of the lesions, was collected in sterile capillary pipettes. The papules and vesicles were excised under aseptic conditions and emulsified by grinding in a mortar moistened with Locke's solution. Sand was not used. The emulsified material was taken up in 0.5–1.0 cc. of Locke's solution and injected by means of a tuberculin syringe. More than 15–20 minutes never elapsed between the collection of the material from the patients and its inoculation into animals. All monkeys were inoculated intratesticularly (0.2–0.25 cc.). In addition to this route, some were inoculated intravenously, intracutaneously (0.1 cc.), and in the inguinal lymph nodes (0.2 cc.). The rabbits, guinea pig, and white rat were inoculated intratesticularly; the chickens in the wattles.

Examination of Animals and Tissues.—Daily examinations of the animals were made for 3 weeks following the inoculations. Tissues, removed under ether anesthesia for histological studies, were fixed in Zenker's fluid with 5 per cent acetic acid, sectioned, and stained with methylene blue and eosin. In addition to a study of the general character of the lesions, a very careful search for eosin-staining nuclear inclusions was made in numerous sections of all the tissues. Details concerning the tinctorial reactions of these inclusions are given by Tyzzer (7), Lipschütz (8), Goodpasture (9), and others.

EXPERIMENTAL.

In the experiments to be reported, the majority of the monkeys, 7 of 10, were vervets. The reason for this will become obvious furthur on and the chief interest in these monkeys centers around the results obtained by means of intratesticular inoculation of emulsified vesicles and papules. In connection with this phase of the work, 14 experiments were performed; and in view of the results obtained it seems advisable to give a detailed account of each.

Experiment 1.—Monkey A; vervet. November 12, 1924. 10 cc. of blood collected from varicella patient, Case 1, 36 hours after the appearance of the eruption, was injected intravenously into Monkey A. Fluid from 30 vesicles was also collected at the same time and injected intradermally in left eyelid, in left and right thighs, and in right side of abdominal wall. While under observation the animal showed no manifestations suggestive of chicken-pox. The temperature ranged from 101.7° to 102.9°F. No tissue was removed for histological study.

Although Monkey A showed no visible specific reaction, it is possible that he became infected and that an immunity to chicken-pox was established. 5 months later he was used for intratesticular inoculation (Experiment 11).

Experiment 2.—Monkey B; vervet. Chicken A. March 5, 1925. 2 papules were removed from varicella patient, Case 2, 18 hours after the appearance of the eruption, emulsified, taken up in 1.0 cc. of Locke's solution, and injected as follows: Monkey B, 0.2 cc. in each testicle, 0.2 cc. in left inguinal lymph node, and 0.1 cc. intradermally; Chicken A, 0.1 cc. in right wattle.

Monkey B.—While under observation the animal showed no gross significant reaction. The temperature ranged from 101.6° to 103.5°F., reaching its highest mark 9 days after the inoculation. A skin nodule, removed on the 5th day, showed a central necrosis surrounded by polymorphonuclear and mononuclear cells. No nuclear inclusions were seen. While the right testicle, removed on the 5th day, showed upon gross examination evidences of injury, nothing of a specific nature was observed. After fixation the testicle was divided into three parts and sections were made of each block. Block 1 showed definite evidences of injury to the tubules and interstitial tissue with an infiltration of mononuclear and polymorphonuclear cells. No nuclear inclusions were found. In Block 2 the reaction was of the same general character as that observed in Block 1, with the exception that it was fairly well localized to a narrow streak running through the section. At one point (Fig. 1) in the damaged interstitial tissue numerous cells, which looked like endothelial leucocytes, were swollen and had within their nuclei typical eosin-staining inclusions (Fig. 6). The inclusions were found in all sections from this block. Block 3: Very little evidence of injury and no nuclear inclusions were observed. The right inguinal lymph node, removed on the 10th day, showed necrotic areas without nuclear inclusions. In the visceral tunic of the left testicle, removed on the 10th day, were found about 20 minute discrete reddish nodules. After fixation the testicle was divided into three parts and sections were made from each block. Blocks 1, 2, and 3: The visceral tunic was thickened and more cellular than usual. In addition to the general thickening, definite localized lesions, made up for the most part of mononuclear cells, were found. The tubules showed very little damage but a few localized lesions were seen in the interstitial

tissue. All the lesions in this testicle were healing and no nuclear inclusions were seen.

Chicken A.—The nodule in the wattle was removed on the 12th day. Upon microscopic examination a central necrosis surrounded by mononuclear cells was found. No nuclear inclusions were observed.

In Experiment 2, typical pink-staining nuclear inclusions were found in the vervet's testicle removed 5 days after inoculation with emulsified varicella papules. None were found, however, in the testicle removed after 10 days.

Experiment 3.—Monkey C; vervet. March 12, 1925. Fluid and scrapings from 20 vesicles were collected from varicella patient, Case 3, 36 hours after the appearance of the rash, mixed with 1.0 cc. of Locke's solution, and injected into Monkey C as follows: 0.25 cc. in each testicle, 0.25 cc. in right inguinal lymph node, and 0.1 cc. intradermally. While under observation the animal showed no significant reaction. The temperature ranged from 101.9° to 103.5°F., reaching its highest point on the 3rd and 13th days after the inoculation. The left testicle was removed on the 11th day, the right on the 13th, and upon gross examination neither showed anything of a specific nature. Each testicle was divided into three parts after fixation and sections were made from each block. The visceral tunic of both was thickened and here and there discrete lesions, characterized by an infiltration of mononuclear cells, were seen. Just beneath the visceral tunic, collections of mononuclear cells were also found. Many of the tubules were damaged and in certain areas of the interstitial tissue there were collections of mononuclear cells. No nuclear inclusions were observed.

The left and right testicle of Monkey C were removed on the 11th and 13th day respectively after inoculation and showed healing lesions in which no nuclear inclusions were seen.

Experiment 4.—Monkey D; vervet. March 23, 1925. 2 skin lesions were removed from varicella patient, Case 4, 48 hours after the appearance of the rash, emulsified, taken up in 0.75 cc. of Locke's solution, and injected into Monkey D as follows: 0.2 cc. in each testicle, 0.1 cc. in right inguinal lymph node, and 0.1 cc. in the skin on the left side of the abdomen. No significant reactions were observed. The temperature ranged from 101.5° to 103.5°F., reaching the highest point on the 4th day after inoculation. The skin nodule and right inguinal lymph node, removed on the 5th day, showed no significant reaction and no nuclear inclusions. The right testicle, removed on the 5th day, upon gross examination showed nothing characteristic. After fixation it was divided into three parts and sections were made from each block. Block 1: The tunic was only slightly damaged. The testicular tissue showed marked evidences of injury with an infiltration of

mononuclear and polymorphonuclear cells in the interstitial tissue. No nuclear inclusions were found. Block 2: The picture was of the same general character as that seen in Block 1. In one area, however, slightly removed from the major portion of the reaction and located just beneath the tunic there was found a discrete lesion (Fig. 2) characterized by hemorrhage and an infiltration of mononuclear cells. Although a few tubules were injured, the principal part of the lesion was in the interstitial tissue and numerous endothelial leucocytes were swollen and contained typical eosin-staining nuclear inclusions (Fig. 3). Block 3: Very little reaction was seen except at one point where there was a definite collection of mononuclear cells. Careful examinations of the left testicle, removed on the 7th day, showed that the inoculum had not entered the gland. No nuclear inclusions were found.

Although no nuclear inclusions were found in the skin and the lymph node removed from Monkey D on the 5th day after inoculation, typical ones were found in the right testicle removed on the same day.

Experiment 5.—Monkey E; vervet. March 24, 1925. 5 lesions, vesicles and papules, were removed from varicella patients—2 from Case 5, 2 from Case 6, and 1 from Case 7—within 48 hours after the appearance of the rash, and ground up together. The emulsified material was taken up in 0.75 cc. of Locke's solution and injected into Monkey E as follows: 0.25 cc. in each testicle, and 0.1 cc. in each of two places in the skin of the abdominal wall. No significant reactions appeared in the animal while under observation. The temperature ranged from 101.6° to 103°F., reaching the highest point on the 1st and 6th days after inoculation. The skin nodule, removed on the 6th day, showed a thickening of the epidermis, and a localized necrosis in the corium surrounded by polymorphonuclear and mononuclear cells. None of the cells contained nuclear inclusions. The left testicle, which was removed on the 6th day, looked as though it had been considerably injured by the inoculation. After fixation it was divided into three parts and sections were made from each block. Blocks 1 and 2: Necrosis of some of the tubules and collections of polymorphonuclear and mononuclear cells in the interstitial tissue were found. Eosin-staining nuclear inclusions were seen in cells of the tubules and in endothelial leucocytes of the interstitial tissue. Block 3: Lesions of the same general character as those seen in Blocks 1 and 2 were encountered. Tubules having cells which contained nuclear inclusions were much more numerous, however. Many of the tubules with swollen cells and nuclear inclusions resembled chicken-pox vesicles (Figs. 4 and 7). Numerous nuclear inclusions were also found in endothelial leucocytes in the interstitial tissue. The right testicle, removed on the 8th day, was also considerably damaged by the inoculation. After fixation it was divided into three parts and sections were made from each block. Extensive damage to the visceral tunic and testicular tissue

with necrosis and infiltration of polymorphonuclear and mononuclear cells was seen in all. No nuclear inclusions were found, however.

Monkey E received the largest inoculum of any animal in the series, getting in all the emulsified tissue of 5 varicella lesions in concentrated form. In this animal for the first and only time I observed nuclear inclusions in glandular cells of the testicle. These eosin-staining bodies were typical of the nuclear inclusions seen in several virus diseases. It is of importance to note that the testicle removed on the 6th day contained many nuclear inclusions while the one removed on the 8th day, although just as badly damaged as the other, showed none. From this it would seem that 8 days is too long a time to wait before castration if one is looking for inclusions.

Experiment 6.—Monkey F; vervet. March 26, 1925. From each of two varicella patients, Cases 8 and 9, a papule and a vesicle were removed within 48 hours after the appearance of the eruption, emulsified, taken up in 1.0 cc. of Locke's solution, and injected into Monkey F as follows: 0.25 cc. in each testicle, and 0.1 cc. in each of three places in the skin over the abdomen. No significant reaction appeared in the animal while under observation. The temperature ranged between 102° and 103.8°F., reaching the highest point 24 hours after inoculation. A skin nodule was removed on the 5th and the 7th days. Upon gross and microscopic examination these showed nothing of a specific nature. The left testicle, removed on the 5th day, was nodular, and hemorrhagic spots were seen in the tunic. After fixation the testicle was divided into three parts and sections were made from each block. Block 1: Considerable damage to the tunic and the testicular tissue had resulted from the inoculation. There was nothing specific in the reaction as a whole. In one area, however, numerous endothelial leucocytes were swollen and contained eosin-staining nuclear inclusions. Block 2: The reaction was in general similar to that in Block 1 but there were no nuclear inclusions. Block 3: The reaction was of the same general character as that seen in Blocks 1 and 2. In one area in the interstitial tissue somewhat removed from the point of maximal damage, there was a collection of endothelial leucocytes some of which contained typical pink nuclear inclusions. The right testicle, removed on the 7th day, did not seem to be damaged. Sections from three blocks showed that the inoculum had not entered the gland. The testicular tissue was normal and no inclusions were found. Sections of the epididymis showed considerable damage with collections of polymorphonuclear and mononuclear cells. No inclusions were found, however.

Nuclear inclusions were found in two of three blocks from the left testicle of Vervet F removed 5 days after inoculation. No inclu-

sions were found in pieces of skin removed 5 and 7 days following the inoculation.

Experiment 7.—Chickens B and C. March 27, 1925. 2 recently formed vesicles were removed from varicella patient, Case 10, within the first 48 hours of the disease, emulsified, and taken up in 1.0 cc. of Locke's solution. 0.2 cc. of the emulsion was injected into each wattle of two chickens, B and C. A wattle was removed on the 4th, 5th, and 7th days after inoculation. Nothing specific was observed upon gross or upon microscopic examination. No nuclear inclusions were seen.

Experiment 8.—Monkey G; ringtail. April 2, 1925. From varicella patient, Case 11, 3 lesions, 1 papule and 2 vesicles, were removed within 36 hours after the onset of the disease, emulsified, taken up in 0.75 cc. of Locke's solution, and injected into Monkey G as follows: 0.2 cc. in each testicle and 0.1 cc. in each of 2 areas in the skin of the abdominal wall. While under observation the animal showed nothing of a specific nature. The temperature ranged from 102° to 103.5°F., reaching the highest point 24 hours after inoculation. A skin nodule and both testicles were removed on the 5th day. Each testicle was divided into three parts and sections were made from each block. In sections of the skin the epidermis was thickened and the corium was necrotic in places and contained many mononuclear and polymorphonuclear cells. No inclusions were seen. Both testicles had been injured by the inoculation and showed necrosis, hemorrhage, and collections of mononuclear and polymorphonuclear cells. No nuclear inclusions were found.

Experiment 9.—Guinea Pig A. April 3, 1925. A papule and a vesicle were removed from varicella patient, Case 11, on the 3rd day of the disease, emulsified, taken up in 0.5 cc. of Locke's solution, and injected into the testicles of Guinea Pig A. Nothing of a specific nature was observed in the animal while under observation. The temperature ranged from 100.8° to 102.2°F. Both testicles, removed on the 5th day, were divided into three parts each after fixation, and sections were made from each block. Both testicles had been damaged by the inoculation. There were areas of necrosis surrounded by hemorrhage and collections of mononuclear and polymorphonuclear cells. No nuclear inclusions were seen.

Experiment 10.—Rabbit A. April 5, 1925. A papule and a vesicle were removed from varicella patient, Case 12, 36 hours after the appearance of the rash, emulsified, taken up in 0.5 cc. of Locke's solution, and injected into the left testicle of Rabbit A. Nothing specific was noted in the animal while under observation. Its temperature ranged from 102° to 103.5°F., reaching the highest point 4 days after the inoculation. Both testicles were removed on the 5th day. After fixation the right was divided into four parts and the left into five. Sections were made from each block. The right uninoculated testicle proved normal. The left testicle had been considerably damaged by the inoculation but no nuclear inclusions were found.

Experiment 11.—Monkey A, vervet; Monkey H, macaque; White Rat A. April 7, 1925. 24 hours after the appearance of the eruption, 5 lesions were removed from 2 varicella patients—1 vesicle and 2 papules from Case 13 and 2 papules from Case 14. The material was emulsified, taken up in 1.0 cc. of Locke's solution, and injected, into 3 animals as follows: 0.25 cc. in the right testicle of Monkey A; 0.15 cc. in each testicle and 0.1 cc. in the skin of the abdominal wall of Monkey H; and 0.1 cc. in each testicle of White Rat A.

Monkey A, Vervet.—The right testicle, removed on the 6th day, was divided into three parts after fixation. Sections made from each block showed that considerable damage to the tubules and interstitial tissue had resulted from the inoculation. No nuclear inclusions were found.

Monkey H, Macaque.—The left and right testicle, removed on the 4th and 6th day respectively, were divided and sectioned in the usual manner. Considerable damage to the tubules and interstitial tissue had resulted from the inoculation but no nuclear inclusions were found.

White Rat A.—Both testicles, removed on the 6th day, were divided and sectioned in the usual manner. Although considerable damage to the tubules and interstitial tissue had resulted from the inoculation, no nuclear inclusions were seen.

Monkey A, vervet, had already been used in Experiment 1 and at the time of inoculation might have been immune to varicella because of the previous injection. At any rate no nuclear inclusions were found in the right testicle 6 days after inoculation.

Experiment 12.—Monkey I; marmoset. April 8, 1925. 2 vesicles and 1 papule were removed from varicella patient, Case 15, within 48 hours after the appearance of the rash, emulsified, taken up in 0.5 cc. of Locke's solution, and injected into Monkey I, 0.15 cc. in each testicle. Both testicles were removed on the 5th day and after fixation each one was divided into three parts. Sections from each block showed the damage to the tubules and interstitial tissue which is an inevitable result of the inoculation, but no nuclear inclusions were found.

Experiment 13.—Rabbit B. April 9, 1925. 1 vesicle and 1 papule were removed from varicella patient, Case 16, about 36 hours after the appearance of the eruption. The material was emulsified, taken up in 0.75 cc. of Locke's solution, and injected into the right testicle of Rabbit B. This testicle was removed on the 4th day and after fixation was divided into seven parts. Sections were made from each block. Considerable damage to the tubules and interstitial tissue had resulted from the inoculation, but no nuclear inclusions were found.

Experiment 14.—Monkey J; vervet. April 11, 1925. 2 pieces of skin were removed from a normal adult volunteer, emulsified, taken up in 0.4 cc. of Locke's solution, and injected into Monkey J, 0.2 cc. in each testicle. The temperature of the animal ranged from 101.8° to 104°F., reaching the highest point 48 hours

TABLE I.

Occurrence of the Nuclear Inclusions.

Experimental animal.	Inoculum.	Tissues examined histologically.	No. of days after inoculation.	Nuclear inclusions.
Vervet A (immune ?).	Emulsified lesions.	Right testicle.	6	—
Vervet B	" "	Skin.	5	—
		Right testicle.	5	+
		Left "	10	—
		Inguinal lymph node.	10	—
" C	Vesicle fluid and scrapings.	Left testicle.	11	—
		Right "	13	—
" D	Emulsified lesions.	Skin.	5	—
		Inguinal lymph node.	5	—
		Right testicle.	5	+
" E	" "	Skin.	6	—
		Left testicle.	6	+
		Right "	8	—
" F	" "	Skin.	5	—
		"	7	—
		Left testicle.	5	+
" J	Skin from normal volunteer.	Right "	5	—
Ringtail G	Emulsified lesions.	Skin.	5	—
		Right testicle.	5	—
		Left "	5	—
Macaque H	" "	Right "	4	—
		Left "	6	—
Marmoset I	" "	Right "	5	—
		Left "	5	—
Rabbit A	" "	Left "	5	—
" B	" "	Right "	4	—
Guinea Pig A	" "	" "	5	—
		Left "	5	—

TABLE I—*Concluded.*

Experimental animal.	Inoculum.	Tissues examined histologically.	No. of days after inoculation.	Nuclear inclusions.
White Rat A	Emulsified lesions.	Right testicle.	6	—
		Left "	6	—
Chicken A	" "	Right wattle.	12	—
" B	" "	" "	4	—
		Left "	5	—
" C	" "	Right "	7	—

+ indicates presence of eosin-staining nuclear inclusions.
— " absence " " " " "
Testicles into which the inoculum did not enter are not indicated in this table.

after inoculation. The right testicle, removed on the 5th day, was divided into three parts after fixation. Sections from each block showed that damage to the tubules and interstitial tissue had resulted from the inoculation. This damage was characterized by necrosis, hemorrhage, and collections of mononuclear and polymorphonuclear cells. No nuclear inclusions were found. The left testicle, removed on the 7th day, was normal since the inoculum had not entered the gland. No inclusions were found.

A summary of the experiments with special reference to the presence of eosin-staining nuclear inclusions in the inoculated tissues is given in Table I.

DISCUSSION.

A number of diseases are characterized by fever, papules and vesicles showing some destruction of the skin and infiltration of it with polymorphonuclear and mononuclear cells. In some of them, *e.g.* chicken-pox, herpes simplex, and herpes zoster, the gross and microscopic appearance of the skin lesions are so similar as to be almost identical. In addition to this, eosin-staining nuclear inclusions (Fig. 5) in the epidermal cells and endothelial leucocytes are a most characteristic feature. Furthermore, tissues experimentally damaged by the virus of herpes simplex regularly show acidophilic nuclear bodies (10). Similar inclusions are also found in lesions produced by Virus III (11) which is indigenous to rabbits.

The eosin-staining nuclear inclusions are so consistently found under certain conditions that to many workers they appear extremely significant. Some consider them merely as products of degeneration, but others believe that they are the virus itself, while yet others think of them as virus surrounded by a mantle of altered nuclear material. As yet their nature has not been definitely determined. This fact, however, does not lessen their significance for experimental work. I have never found typical, eosin-staining nuclear inclusions save in virus diseases, and this has been the experience of other workers (12). In view of this fact there is reason to believe that infection with a virus has taken place when such inclusions are found (10). To find them is not always easy, especially in experimental animals, and a careful search should be made before a negative result is recorded. Furthermore, it must be kept in mind that there is an optimum time (9) following the inoculation for the finding of the inclusions after which they disappear rapidly.

For the 14 experiments reported in this paper, material from 16 typical cases of chicken-pox was used. The wide derivation of the material lessens the chances of an incorrect diagnosis affecting the results. The nuclear inclusions were found only in the testicles of 4 vervets,—which had been inoculated with material from different sources,—and not in other inoculated tissues of the same animals, nor anywhere in the other experimental animals (Table I). Furthermore, they were not found in the testicles of a vervet inoculated with normal skin, in the testicle of a vervet inoculated with emulsified varicella lesions but possibly immunized by a previous injection, nor in a vervet's testicles removed 11 and 13 days after inoculation with vesicle fluid and scrapings. The testicles of the 4 vervets in which inclusions were found were removed 5 and 6 days after inoculation while those removed after 8 and 10 days, although inoculated with the same material and as severely traumatized as the others, contained no inclusions. It is of importance that the 4 vervets in which positive results were obtained came from at least two sources and were not in contact with one another at any time. In the light of what is known concerning eosin-staining nuclear inclusions and in view of the conditions under which the experiments reported in this paper were performed, it seems reasonable to conclude that the acido-

philic nuclear inclusions in the 4 vervets' testicles were manifestations of the presence of a virus. The nature of the virus and the possibility of transmitting it through a series of monkeys remain to be determined.

CONCLUSIONS.

Eosin-staining nuclear inclusions resembling those deemed characteristic of a certain well known group of filterable viruses, amongst which is varicella, were found in vervets' testicles inoculated with emulsified tissue of human varicella lesions.

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EXPLANATION OF PLATES.

PLATE 5.

FIG. 1. Lesion in right testicle of Vervet B following the injection of emulsified varicella material. *A* indicates area from which Fig. 6 was drawn. × 135.

FIG. 2. Discrete lesion in the right testicle of Vervet D 5 days after inoculation with varicella material. *A* indicates area from which photograph in Fig. 3 was taken. × 135.

FIG. 3. Nuclear inclusions indicated by *B* in the lesion shown in Fig. 2. × 1000.

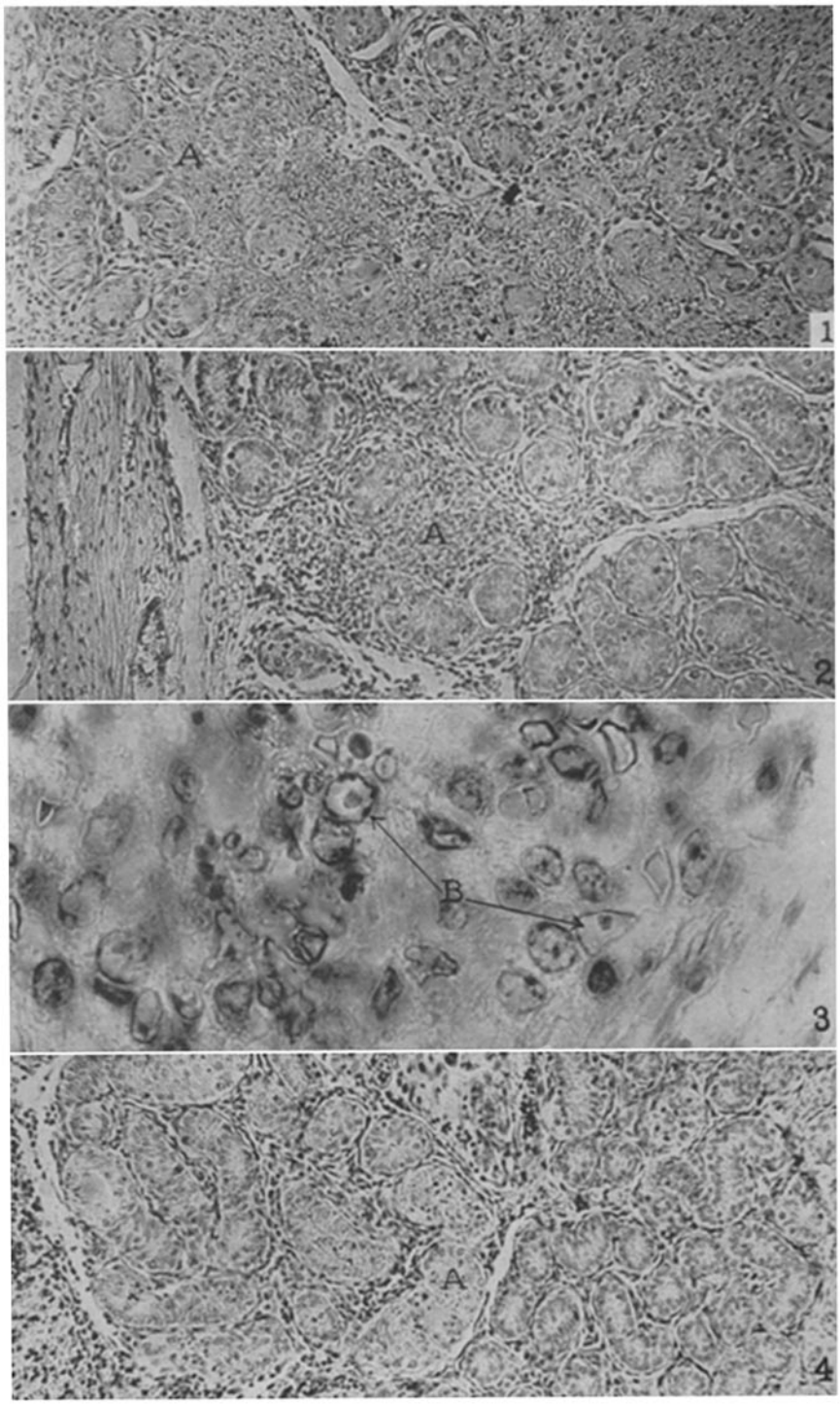
FIG. 4. Lesion in left testicle of Vervet E following the injection of emulsified varicella material. *A* indicates area from which Fig. 7 was drawn. × 135.

PLATE 6.

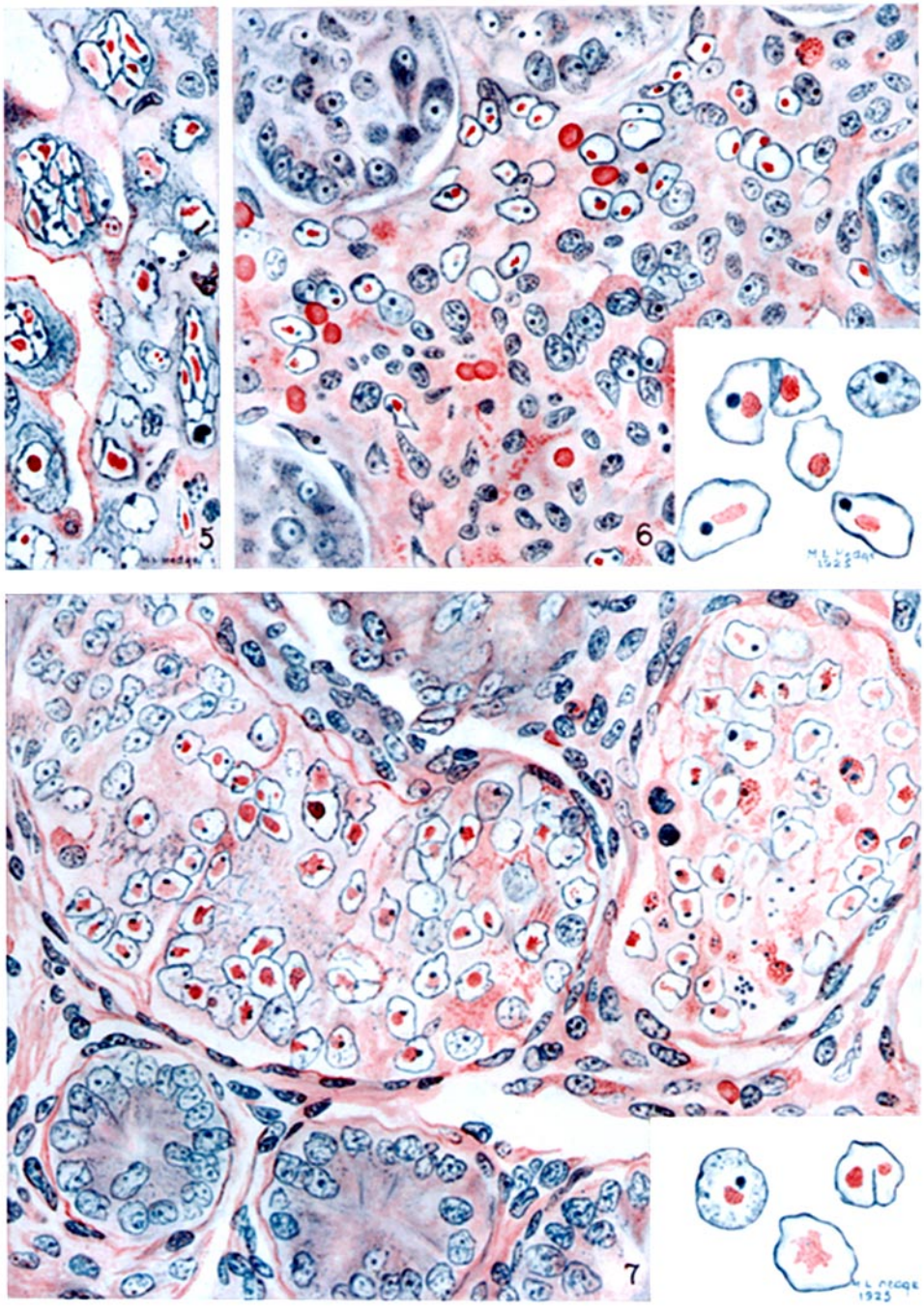
FIG. 5. Nuclear inclusions in epidermal cells of human varicella lesion. Eosin-methylene blue. × 600.

FIG. 6. Nuclear inclusions in endothelial leucocytes of right testicle of Vervet B. Eosin-methylene blue. × 600. × 1200.

FIG. 7. Nuclear inclusions in gland cells of the left testicle of Vervet E. Eosin-methylene blue. × 600. × 1200.



(Rivers: Varicella.)



(Rivers: Varicella.)