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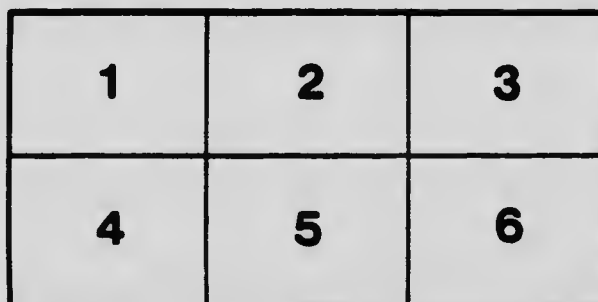
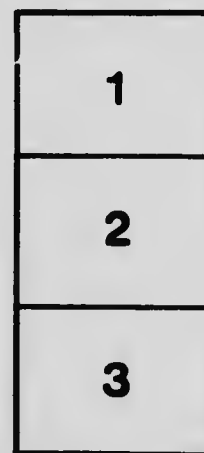
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**A FATAL CASE OF BLASTOMYCOSIS.**

**By FRANCIS J. SHEPHERD, M.D., LL.D., AND L. I. RHEA,  
M.D., MONTREAL.**

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## A FATAL CASE OF BLASTOMYCOSIS.

By FRANCIS J. SHEPHERD, M.D., LL.D., and L. I. RHEA, M.D.,

Montreal.

**M** M. M., an Italian, twenty-five years of age, came to our clinic on Aug. 2, 1910, complaining of an eruption on the nose and side of the face. Thinking the case looked like blastomycosis we admitted him into our wards for observation.

**HISTORY.** His parents are living and healthy; his brothers and sisters are also healthy. When he came to this country two years ago he was in perfect health, but began to fail about four months ago. He has been working as a railway navvy, but lately has lived in Montreal.

On examining him in the wards the day after admission, we found that in addition to the eruption on his face, there was a sinus discharging pus freely and leading down to diseased bone at the sternal end of the right clavicle; also a fluctuating swelling over the second lumbar vertebra. The growth on the face covered the upper three-quarters of the right side of the nose, extending up to the inner canthus of the eye, and was continuous with a fungating growth below the right lower eyelid, the size of a twenty-five-cent piece. This, in parts, over the nose, was ulcerating and discharging pus. There were spots, evidenced by scars, which showed healing; in some locations a thick scab covered the ulceration and in the neighborhood of the growth, on the right cheek, were some nodules of a reddish color which had not yet ulcerated.

Portions of tissue were removed and sent to the pathologist and cultures were also made from pus taken from the lesions on the face and that coming from the sinus at the upper end of the sternum.

An examination of the heart and lungs was negative at this time and the urine was also found to be normal.

The pathological examination, both cultures and sections, having shown blastomycosis, the patient was put on twenty-grain doses of iodide of potash three times a day. This appeared to do him no good, for by September 1st, his respirations became rapid (36) and his temperature rose to 102° F. and a dull area appeared over the base of the right lung, with diminished breath sounds and increased vocal fremitus, but no blowing breathing. There was diminished expansion on the right side. An aspirating needle was thrust into the dull area, but only bloody fluid resulted, which produced no cultures of the

blastomyces. His sputum, which at this time was very profuse, also yielded no evidence of blastomycosis on examination.

His condition growing worse, to our sorrow, he left the Hospital on October 8th, promising to report his condition from time to time. We heard nothing from him until October 24th, when he again applied for admission.

On again examining him, we found that the lesion on his face had increased in size and new spots had appeared below the old ones. His left lung continued to be clear and healthy, but his right lung was somewhat worse than before. The sinus over the upper part of the sternum was much the same, but the fluctuating swelling over his lumbar spines had increased in size and was red and shiny. A red, swollen area had appeared over the right wrist. The pulse was now 96 to 120, respirations 25 to 30 and the temperature, 98° to 101° F.

The tumor in the lumbar region was opened and much pus evacuated; the bone was not involved. Cultures showed blastomycosis. He had become very emaciated and treatment with iodide of potassium was of no avail, even in doses of forty grains three times daily.

In November, the condition of the lesions was as follows:

"The large growth on the face now involves the upper and lower eyelids of both eyes and the tissues over both malar bones and nose. The edges of the ulcerated areas are sharply defined, raised and irregular in outline and covered by a dry, brown crust. When the crust is removed the edges of the ulcers seem to be lobulated and deeply fissured. The ulcer over the malar region extends to the bone. The left lower eyelid is much retracted, exposing the eyeball. The disease has now affected the left nostril and the left upper lip and has extended to the adjacent mucous membrane. The lesions on the lip are, as yet, quite superficial. New areas are beginning to involve the chin and under the chin is a new lesion about 1 cm. in diameter.

"On the back of the neck, just below the lower margin of the hair, there are several superficial, reddish spots of disease, sharply outlined. The sinus at the sternal end of the clavicle has increased in size and a new sinus has opened above the old one, which also leads to a cavity in the sternal end of the clavicle. Both sinuses discharge pus freely.

"Over the posterior border of the deltoid muscle, near the axillary fold, an ulcerated area, 2 cm. in diameter, has appeared, with raised undermined edges. Over the upper lumbar region where the abscess was opened, there is a deep ulcer discharging pus; there is also an

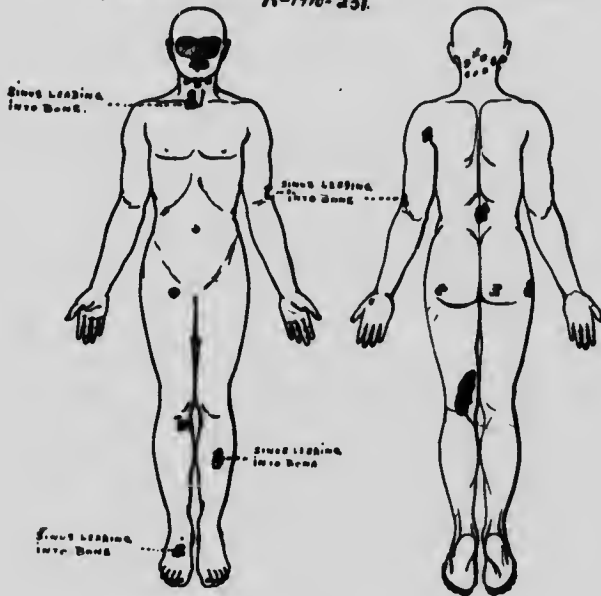
ulcer on each buttock and over the right great trochanter. There are sinuses in front of the left tibia, on the inner surface of the lower end of the right humerus and over the middle of the right tarso-metatarsal articulation, all leading down to diseased bone.

"Before death, a large fluctuating swelling appeared in the left popliteal space and right inguinal region. The condition of the right lung became worse until the whole organ was involved.

"By the beginning of December, the patient became much more emaciated, the pulse continued to be rapid, high temperatures prevailed and the patient gradually grew weaker and died on December 27th, about nine months from the first onset of the disease."

DISTRIBUTION OF THE SKIN LESIONS IN A CASE OF  
GENERALIZED BLASTOMYCOSIS.

MONTREAL GENERAL HOSPITAL.  
A-1910-231.



ULCERATED AREAS ARE SHADED

SUBCUTANEOUS ABSCESSSES ARE SOLID

The autopsy report subjoined herewith has been furnished me by Dr. L. J. Rhea, Director of the Pathological Laboratory of the Montreal General Hospital, and to whom I am also indebted for the excellent photomicrographs.

AUTOPSY.

(10—231.)

The chief interest in this case, from the pathological viewpoint, is the wide distribution of the lesions, the character and extent of these lesions and the bacteriological study. The following is a brief extract of the post-mortem findings. No reference is made to the cutaneous lesions, as these have been described in the clinical presentation of the case.

**PERITONEAL CAVITY.** The parietal peritoneum, great omentum, gastro-hepatic omentum, and the capsules of the liver and spleen, are thickly seeded with small, discrete, yellowish-white, firm areas, which vary in size from 1 mm. to 3 or 4 mm. in diameter. They are most numerous in the great omentum, the pouch of Douglas, and in the recesses on each side of the lower lumbar vertebrae. The mesenteric lymph nodes are slightly enlarged. On section, they show soft, pinkish pulp in which are numerous small, rounded, soft, yellowish areas.

**PLEURAL CAVITIES.** Both pleural cavities show fibrinous adhesions between the parietal and visceral layers. The heart and pericardium show no evidence of blastomycosis.

**LUNGS.** Right, 920 gms.; left, 950 gm. The right visceral pleura is thickened, varying from 2 to 5 mm. in thickness, is firm, opaque and tense, especially over the lower lobe. The lung tissue cuts readily, has a fleshy appearance and shows diffuse consolidation. The greater part of the right lung consists of grayish areas of different sizes, between which the tissue is pale red. The lower lobe is much smaller than normal. The pleura covering this lobe and that between the upper and lower lobes, averages 3 to 5 mm. in thickness and throughout, there are numerous sharply outlined, generally oval, yellowish areas of softening, which vary from 1 mm. to 1 cm. in length.

The bronchi are wide and are generally surrounded by a zone of pale, white, glistening, firm tissue. The cut surface of the lung shows several honeycombed areas, in which are numerous cavities, varying from 2 to 9 mm. in diameter. They contain a greenish-gray, puriform material.

The left lung is larger than the right and its pleura contains yellowish-white, slightly elevated areas, which vary from 1 to 4 mm. in diameter and are apparently in the underlying lung tissue. The cut surface is dark red and shows very many discrete and confluent yellowish-white areas, which vary from 1 to 5 mm. in diameter. These areas contain thick, yellowish, puriform material. The bronchi do not show the peribronchial thickening present in the right lung.

**SPLEEN.** Weight, 220 gms. There is no evidence of blastomycosis, besides the nodule seen in the capsule.

**LIVER.** Weight, 1150 gms. The only gross lesions are seen in the capsule, where there are numerous yellowish areas similar to those seen elsewhere in the peritoneum.

**KIDNEYS.** Weight, 280 gms. Shining through the capsule are several sharply outlined, small, round to oval, yellowish-white areas. These are scattered over the



## A FATAL CASE OF BLASTOMYCOSIS

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whole surface. In both the medulla and cortex are numerous yellowish-white, soft areas, varying from 1 to 4 mm. in diameter. They consist of puriform material. They are more numerous in the cortex than in the medulla.

**ADRENALS.** In the cortex of the left adrenal there is a yellowish-white area, 3 mm. in diameter, which contains soft material. The right adrenal shows no macroscopic lesions.

**GASTROINTESTINAL TRACT.** This is normal except the œsophagus, 7 cm. from the cardiac end of the stomach there is a small fluctuating area, 1 cm. in diameter, just beneath the mucous membrane.

**OSSEOUS SYSTEM.** The right clavicle, right elbow joint, left tibia and left carpo-metatarsal bones were removed and later examined. The elbow joint and tibia were sawed longitudinally with a hand saw.

**RIGHT CLAVICLE.** The inner 5 cm. of the clavicle is thickened; 2.5 cm. from the articular surface it is 2.8 cm. thick; the articular surface is normal. 3 cm. from the articular surface there is an oval hole, 1.1 cm. long and 6 mm. broad, in the bone, which communicates with the medullary cavity. The anterior surface of the clavicle throughout the inner 5 cm. is roughened, due to narrow, communicating bands of bony tissue, between which are depressed, elastic, pale, glistening tissue, apparently the periosteum, beneath which the bone has been destroyed.

**RIGHT FOOT.** The bones of the right foot, about which the sinus described communicates, have lost their periosteum. Their external surfaces are granular, and surrounding them there is a thick, purulent fluid.

**TIBIA.** The tibia is sawed longitudinally, just to one side of an opening in the bone which communicates with the medulla and the sinus referred to above. The medullary cavity, beneath the bone sinus, shows a marked change. Throughout an area 8.5 cm. long, it is filled with soft, yellowish-white, granular material, about which, in places, the enveloping bone is rough and friable. This grayish tissue in the medullary cavity gradually passes into a pale, œdematous tissue, beyond which the medulla is bright red.

**FEMUR, ELBOW JOINT AND ULNA.** The bones are sawed through longitudinally. On the inner aspect of the lower end of the humerus there is an irregular area, 2.4 by 2.5 cm., throughout which the bone is absent, and into which a probe passes when inserted into the skin sinus. At this point, the bone of this opening is soft, pale grayish-red and bathed in a thick puriform material. The underlying medulla shows an area, 4 cm. long, throughout which is a soft, granular, grayish-white tissue. The synovial surface of the elbow does not appear to be involved and the cavity is free from exudate.

The brain shows no macroscopical lesions. The middle ears and basal sinus are normal.

### ANATOMICAL DIAGNOSIS.

Generalized blastomycosis.

Blastomycosis of the skin, bones, peritoneum, lymph nodes, pleuræ, and lungs.

Generalized blastomycosis of the kidneys.

Chronic obliterative pleuritis.

Blastomycosis of the left adrenal, prostate and œsophagus.

Microscopically, the lesions in the various organs show the same general process and are illustrated in the photomicrographs and

drawings. There is necrosis of the tissues, cellular infiltration, giant cells and many spheres with definite encapsulating membranes. The organisms are very numerous and are seen both extracellularly and within the cytoplasm of the giant cells. The number of the giant cells varies; some sections contain only one, others eight or more. The organisms appear in the tissues as round bodies which have a sharply outlined, limiting capsule. They show various stages of budding. No mycelia, or spheres containing spores, as seen in dermatitis coccidioides, were found in the tissue.

The organism was recovered in cultures several times from the subcutaneous abrasions during life and from several of the lesions at post-mortem examination. It grows best on sugar-containing media, beneath rather than within the thermostat. In five days, small colonies, similar to those of *Oidium lactis*, are visible. Microscopically, they consist of branching mycelia. The growth becomes incorporated with the superficial layers of the media. The lesions produced in mice are well shown in the gross specimen.

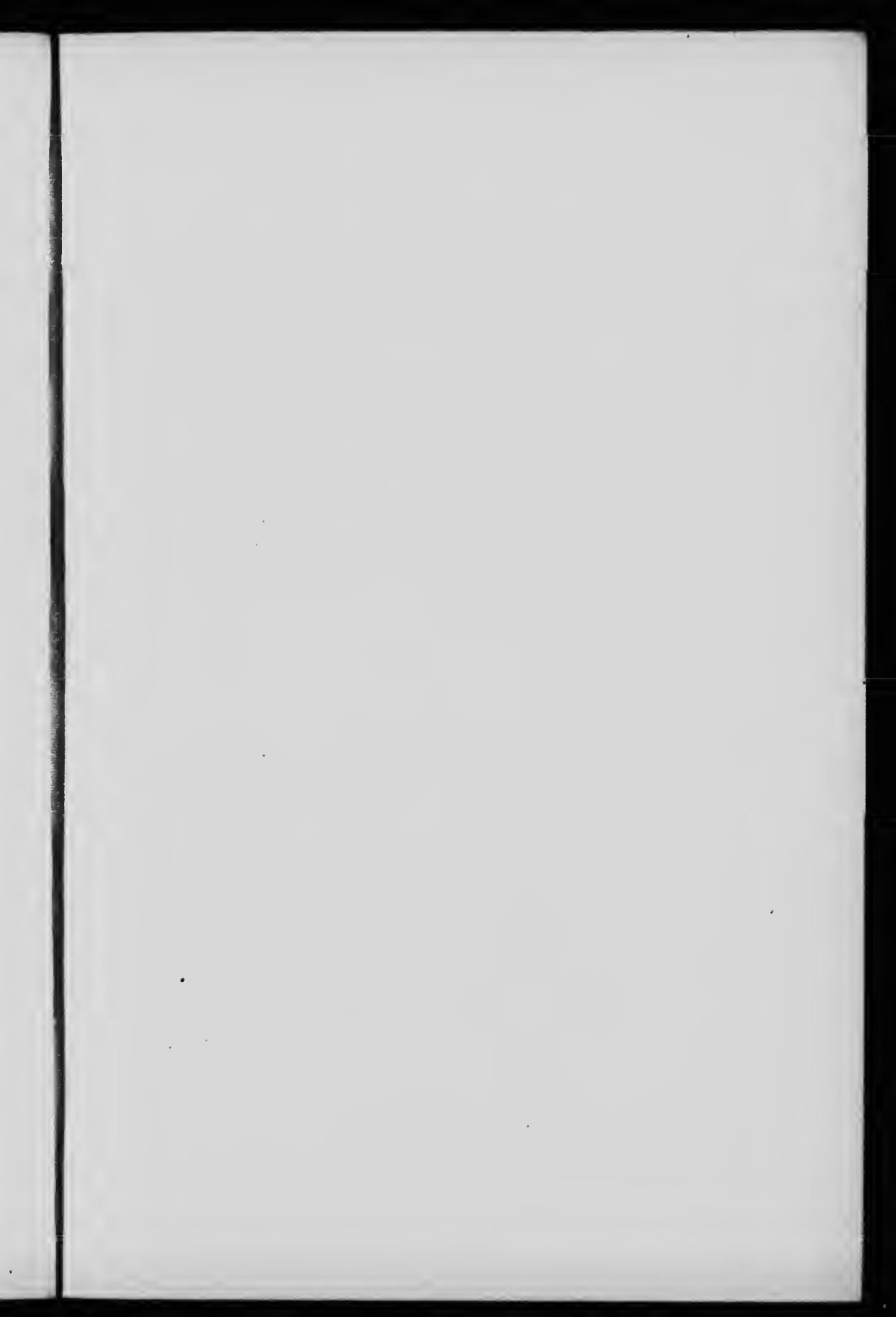






FIG. 1.  
Generalized Blastomycosis.  
Lesion on face.

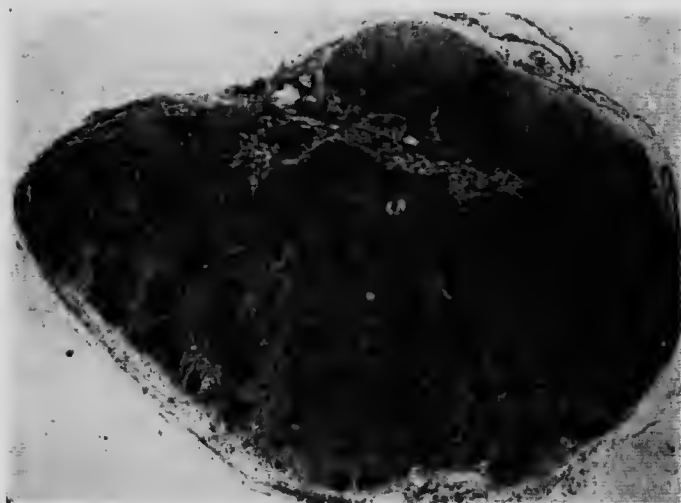


FIG. 2.  
Generalized Blastomycosis.  
Cross section of mesenteric lymph node. The small, irregular-shaped,  
dark areas are miliary abscesses.

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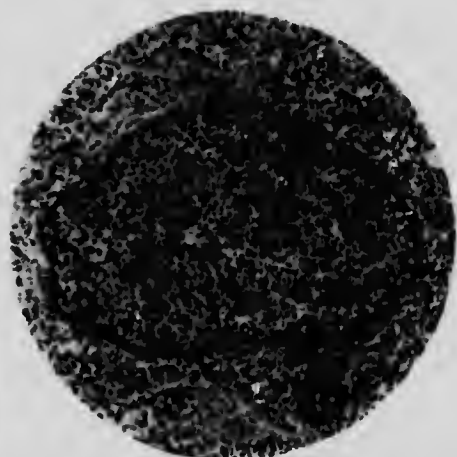


FIG. 3.  
Generalized Blastomycosis.

Low power—showing single military abscess of lymph node. A large giant cell containing two organisms is seen at the upper, righthand border of the abscess, and several other organisms can be seen in the section.

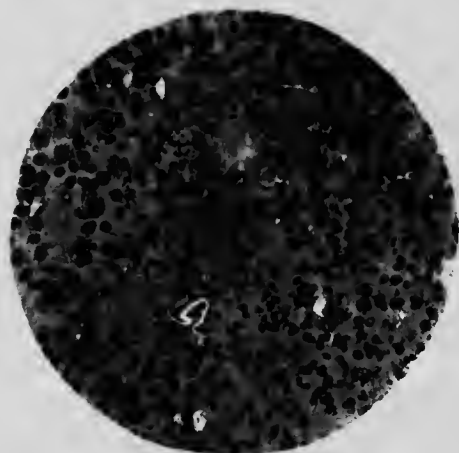


FIG. 4.  
Generalized Blastomycosis.

Higher power than Fig. 3. Peripheral portion of military abscess of lymph node. Several organisms can be seen.



FIG. 5.  
Generalized Blastomycosis.

Giant cell with one organism in it. Stained with Mallory's connective-tissue stain. The narrow, white zone around the central, circular, darker-staining area is the peripheral capsule.

