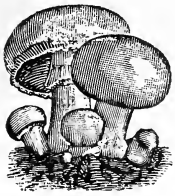
Preserve for Reference (1927) **Confidential to Dealers**



WHOLESALE PRICE LIST

OF

MUSHROOM SPAWN

Effective May 1, 1920, subject to change without notice.

American Spore Culture Spawn, produced from the original spores of the best varieties, gathered, germinated and propagated in pure culture under the famous French process acquired and exclusively controlled by the American Spawn Company of St. Paul, Minn., positively the most vigorous and prolific spawn on the market.

In brick form.....**$13.00 per 100 bricks**
In loose or flake form, packed in bottles..**80 cents per quart**
See paragraph 6 inside.

Cultural Directions—"Mushroom Culture," a 4-page leaflet, recently revised under our personal supervision, with blank space for dealer's stamp, at cost from our plates....**4.50 per 1,000**

Owing to violent fluctuations in the paper market, these prices apply to our present supply of leaflets only. Samples on request. See paragraph 3 inside.

Prices are F. O. B. St. Paul, or Mendenhall, Pa. (See paragraph 13). **Terms,** net.

Brick spawn is packed in cases of 100 bricks (they were formerly packed in cases of 160 bricks), and flake or bottle spawn in cases of 35-quart bottles. In less than full case lots an extra charge of 40 cents is made for packing.

Standard Varieties—No. 7 brown; No. 8 cream; No. 9 white. Special varieties upon seasonable notice.

IMPORTANT.—Our spawn, because of the very nature of our process of spore germination in pure culture, is absolutely **free of any trace of the parasite diseases of the mushroom,** a most important consideration which suffering growers will fully appreciate. Dealers are therefore cautioned not to expose it in the same room with spawn from infected sources or of uncertain origin.

American Spawn Company

St. Paul, Minnesota

Cable address: "SPAWN, ST. PAUL."

SUGGESTIONS TO DEALERS

Since we sell as a rule through dealers, we may be pardoned for a few suggestions which may be of assistance to them:

1. **Listing in Catalogues.** Spawn should **not** be omitted from the **fall or bulb catalogue** any more than from the **spring catalogue.** The bulk of your sales will be in midsummer and fall. Mushrooms are essentially a **fall and winter** crop, although a number of growers who are provided with caves or mines where the temperature in the summer does not rise above 60 degrees F., are in a position to grow them the year around.

2. **Catalogue Specifications.** The following specifications are suggested as embodying the characteristics of our product:

MUSHROOM SPAWN (Agaricus Campestris)—

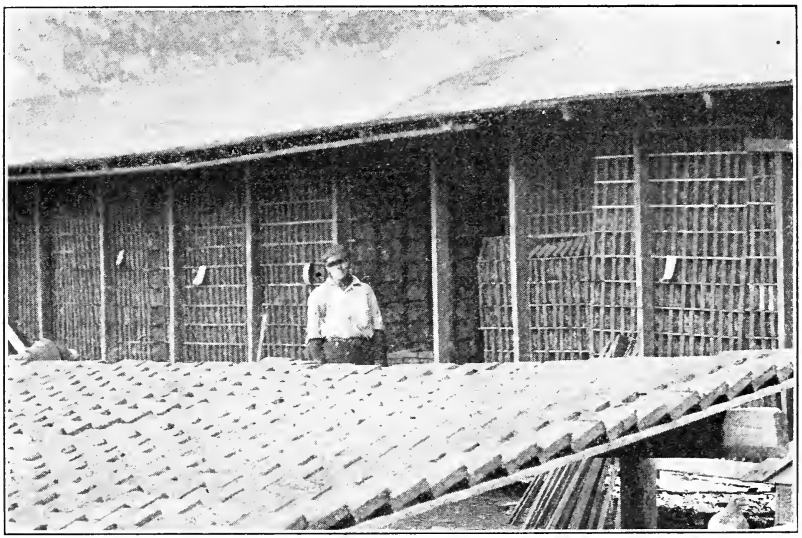
American Spore Culture Spawn, produced from original spore cultures under the new French process which permits the indefinite reproduction of selected varieties without dilution of the strain, and free of any trace of the parasitic diseases of the mushroom. Positively the most vigorous and prolific spawn on the market. Each brick weighs from 1¼ to 1½ pounds, and will spawn about 10 square feet of beds. We keep on hand the cream white variety, which is generally preferred in the markets, but can supply the white or brown varieties, if desired. Per brick, 40 cents, 5 bricks, $..... postpaid; by express or freight, 10 bricks, $.....; 25 bricks, $.....; 100 bricks, $.....

3. **Cultural Directions.** Because success in mushroom culture is dependent upon a strict observance of the basic cultural requirements, it is always desirable to supply, in the catalogue, or in separate leaflets, reliable cultural directions for growing mushrooms. The following are suggested as embodying in a few words the basic principles underlying successful cultivation:

"Mushrooms may be grown in a shed, cellar or cave, under the benches in green houses, in fact in any place where conditions of temperature and moisture are favorable or can be controlled. The proper temperature ranges from 53° to 60° F., with extremes from 50° to 63° F. The atmosphere should be moist enough to keep the beds from drying up, and a gradual renewal of the air, without draughts, should be provided for. Horse manure, properly composted by three or more successive turnings, is the best material for the beds. The object of the turnings is to expose the manure to the air and, by fermentation and oxidation, transform the cellulose into a form of food which may be readily assimilated by the mushroom. The manure is piled in heaps about 3 feet deep and allowed to heat, care being taken to avoid overheating or burning. It is turned or forked over 3 or 4 times, at a week's interval, in such a manner as to bring the inside of the heap to the outside and thus secure a uniform oxidation. The material is sprinkled at each turning but not drenched. When small quantities of manure are used, and a proper heating or composting of the material cannot therefore be obtained, it may be found advisable to admix some loam with it, about one-fourth or one-fifth, and make up the beds after one or two turnings. The beds are made to a depth of about 10 inches. When the temperature of the beds has dropped to about 75° F. the spawn is inserted to a depth of from 1 to 2 inches, and tamped. When the spawn is "running," usually about 2 weeks after planting, the bed is cased. Casing consists in applying a layer of screened loam (a calcerous loam is to be preferred) from 1 to 1½ inches deep to the surface of the bed. The casing should be slightly moist. Mushrooms should appear from 5 to 10 weeks after spawning, and will continue to produce for a period ranging from two to three months."

We supply to dealers and seedsmen, at cost, a four-page leaflet entitled "Mushroom Culture," recently revised under our personal supervision. It is printed from our plates in large quantities, room being left on the last page for rubber stamp of the dealer. This leaflet is as complete a guide to the grower and beginner as can be condensed in four pages, and saves a volume of correspondence with customers on technical questions. A copy packed with each shipment has materially reduced the number of complaints usually received by seedsmen from beginners or inexperienced growers.

4. **Mushroom Spawn and its Manufacture.** Spawn, as the term is used commercially, includes the spawn proper, or **mycelium,** and its carrying medium, in **brick,** cake or other form, in which the



BRICK SPAWN—A section of the drying sheds at the plant of the American Spawn Company, St. Paul, Minn.

mycelium is developed and preserved. In nature mushrooms of the Agaricus type are primarily reproduced by means of spores which drop from their gills at maturity. When germinated these spores produce the thread-like growth known as mycelium or spawn. In its further development, under certain conditions, the mycelium forms pin-heads and finally fully expanded mushrooms. Until very recently nature's method of germinating the spores of the mushroom had remained a profound secret.

Wild Spawn. The wild or natural spawn, generally used by mushroom growers before the advent of pure culture spawn and known as English spawn, mill-track spawn, etc., consisted of mycelium found in old compost heaps and used in the inoculation of bricks or small beds of flake spawn. Under this system, desig-

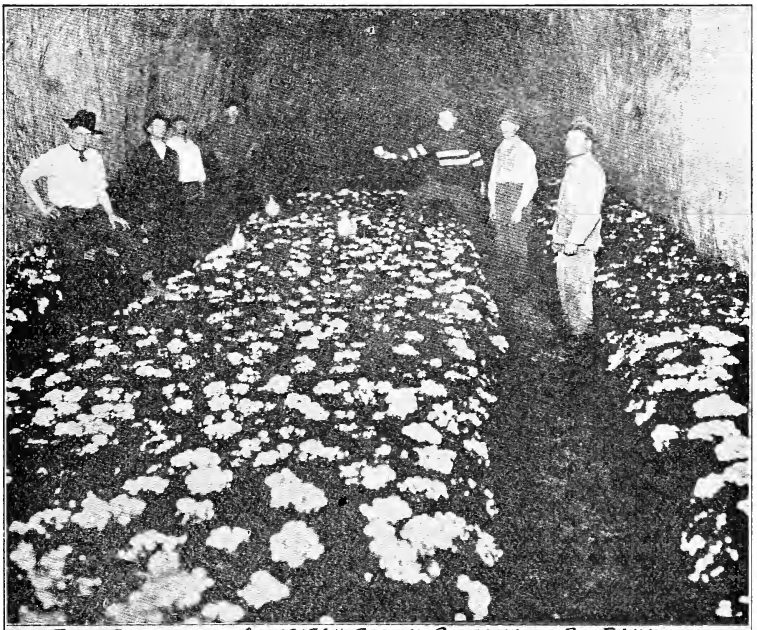
nated as "the chance method" by the Department of Agriculture, selection of varieties was impossible and the vigor or quality of the spawn depended on the more or less virgin conditions of the mycelium found, or its degree of remoteness from nature's original spore culture. Neither of these conditions could be ascertained until the crop appeared, and for commercial purposes it was then too late.

Tissue Culture Spawn. The first important step in overcoming these uncertainties was made in the discovery of the "tissue culture" method which consists in growing mycelium from the tissue or flesh of the mushroom in a sterilized medium, and running the same into bricks of spawn, known as pure culture spawn. Through this method the selection of varieties became possible. It was found, however, that the tissue-culture grown mushroom, though suitable for market, is not desirable for reproduction by the same method, as each generation removes it from its spore origin with consequent loss in vigor and reduction in crop yield. Without the frequent intervention of spore-grown stock in the tissue cultures a gradual weakening of the spawn and the loss of varieties must inevitably result. This explains in a measure the apparent initial success and subsequent failure of a number of spawn makers who have attempted the manufacture of pure culture spawn. The American Spawn Company escaped this fate because it recognized from the start and took into proper account the limitations as well as the advantages of the tissue-culture method, and was able, because of favorable local conditions and sustained effort, to secure the spore stock necessary to maintain the strength of its cultures and to preserve its varieties.

It must not be inferred, however, that the proper spore stock is always available or procurable. In nature it is not easily found or identified, and it must undergo a series of tests before it can be relied upon. Moreover, industrial changes have further reduced the natural sources of supply and correspondingly increased the difficulties of the pure culture spawn-maker, who must face in the near future the dilution of his strains and consequent weakening of his spawn and the probable extinction of desirable varieties. The American Spawn Company who were pioneers in the development of Pure Culture Spawn, known as "Lambert's Pure Culture Spawn," and always on the alert for improvements were, of course, not blind to this situation. It is obvious that the only permanent remedy and safeguard were to be found in successful spore germination.

Spore Germination. For a number of years attempts at spore germination have been made in this country, but more particularly in France where the production of mushrooms exceeds that of any other country in the world. Until recently these experiments have resulted in failure or partial failure. The problems to be solved involve, (1) the gathering of the spores in pure culture (asep-

tically), (2) the germination of the spores under sterile conditions, and (3) the successful development of the germinated spores into mycelium suitable for the manufacture of pure culture spawn. The first requisite was solved in various ways; the second was only partially solved, the methods devised giving only accidental or spasmodic results wholly unreliable for practical purposes; the third and most important requisite from the spawn-maker and mushroom grower's standpoint proved to be the most troublesome. It remained for a French scientist, after years of research and exhaustive tests, which we have closely followed, to devise a working



TEST BEDS OF THE AMERICAN SPAWN COMPANY AT ST. PAUL.

process by which spores can be **gathered, germinated and propagated** in pure culture with absolute certainty, in a remarkably short time, and with uniform results. This is the valuable process we have acquired and **in the exclusive control of which we are fully protected.** We emphasize this statement in order to put our customers on their guard against the statements of individuals who, from time to time, claim to have discovered a method of germinating spores and even of propagating the spores so germinated.

5. **American Spore Culture Spawn.** By the acquisition and operation of this process the American Spawn Company has eliminated at one stroke all the elements of uncertainty in the manufacture of its spawn, and has taken a most progressive, if not **the**

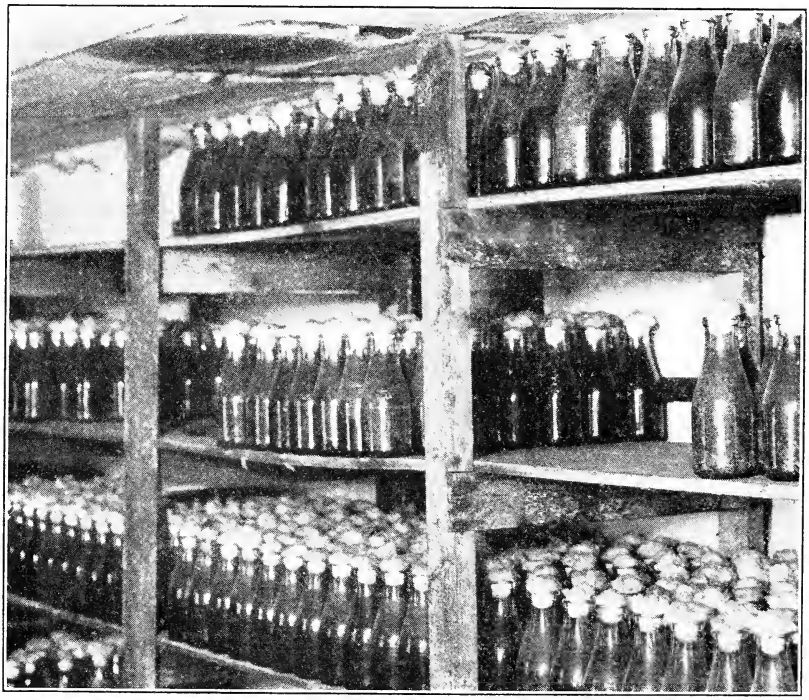
final, step in spawn making, **the introduction of original spore cultures in its bricks without intermediate transfer.** It is unnecessary to dwell at length upon the many points of advantage of spore culture spawn, they are well understood by experienced growers, and may be summarized as follows:

Vigor and prolificness, because derived direct from the spore without dilution or division.

True to type, because the spore process alone permits indefinite reproduction of desirable varieties.

Uniformity, because the degree of remoteness from the spore of different lots or strains is known and controlled, not left to uncertainty or to the caprice of nature.

Preservation of varieties; spores of desirable varieties may be safely stored away by the manufacturer and kept for future use,



BOTTLE SPAWN—A section of the concrete growing rooms in the laboratories of the American Spawn Company, St. Paul, Minn.

whereas the mycelium, the mushroom and tissue culture necessarily deteriorate very rapidly.

Stability; every element of uncertainty is eliminated, and all essential factors in the development of the cultures and the manufacture of the bricks is absolutely controlled.

Improvement of varieties; this field is unlimited since the spore process is the only unerring method of securing continuous reproduction.

6. **Flake (or bottle) spawn.** A demand has arisen in some quarters for spawn in loose or flake form, put up in quart bottles and grown in sterilized medium. In this form of spawn, like in the brick, the growing medium is also the carrying medium for the mycelium. When used intelligently by experienced growers with all necessary precautions, this spawn has given in many cases quicker results than the brick. However, this form of spawn does not furnish to the mycelium the degree of protection which is afforded in the close-grained brick. It is therefore more sensitive than the brick to injury and deterioration in storage and transportation, and is not so resistant to adverse conditions which may be found in the beds by reason of the grower's disregard of cultural requirements. For the accommodation of dealers who may have calls for bottle spawn, we are manufacturing this product using our strong spore cultures for that purpose. It is therefore the best on the market. For the reasons above stated, it is advisable to order this form of spawn for immediate use only; it is usually shipped by express or parcel post.

7. **Varieties.** Our leading varieties are No. 7 brown, No. 8 cream, and No. 9 white. The greatest demand is for the cream and white varieties. We can furnish special varieties upon seasonable notice.

8. **Reservations.** It is too late for the dealer to order his supply of mushroom spawn when the demand is actually upon him. The manufacture of pure culture and of spore culture spawn, in its several stages from the laboratory culture to the finished brick, involves a period of several months. We cannot hasten the process of nature, nor change the variety during its progress. Early orders for future delivery are given precedence as to quantity and variety. On rush orders we are not always able to supply the exact variety or quantity wanted, and delays in transportation frequently occur. We are therefore requesting dealers to give us reasonable advance notice of their wants, and would suggest that they make the same request of their customers. A good practice is to ascertain, immediately after the first of January, the amount of spawn sold during the year, and order on that basis, specifying time of shipments.

9. **Bricks, Boxes, etc.** Each brick of "American Spore Culture Spawn," measures about 8 inches in length, 5 inches in width, and is about 1 inch thick. Our bricks weigh from 1¼ to 1½ pounds and are packed in strong boxes containing 100 bricks each. Each case is stenciled and distinctly numbered, and by reference to this number the original culture and strain from which the spawn was produced can be traced in our records. We do not sell by weight. Half cases contain 50 bricks.

10. **Trade Mark.** The success achieved by our products has, from time to time, brought into the market some inferior grades of spawn which were attempted to be sold as "Pure Culture Spawn." We anticipate that the still greater success of our "spore culture spawn" will soon cause the appearance of a substitute sailing under a name suggesting a similar origin. For that reason all bricks of the genuine "American Spore Culture Spawn" manufactured by this company, are stamped with our trade mark, the letters PC enclosed in a diamond.

We would caution dealers against close imitations of this trade mark, which have recently appeared, such as the letters PC enclosed in a circle, heart or square. The growers have been warned of this deception.

11. **Storage.** It should be remembered by both seedsmen and growers that many failures may be attributed to the improper storage of spawn, for good spawn may be ruined in a relatively short period by carelessness in that respect. Spawn should be kept in a place that will be both cool and dry. The mycelium in the bricks when shipped is in a dormant stage. Moisture combined with a temperature much above 50° F. will start a growth of the mycelium which must eventually result in deterioration of the spawn. When properly stored, mushroom spawn in brick form will retain its vitality for at least one year. We guarantee all our spawn to be in prime condition when leaving our yards. We inspect every brick and ship none but the best. It is not advisable to store flake or bottle spawn for any length of time. (See par. 6.)

12. **Shipments to Growers.** We realize that some dealers' customers insist on receiving their spawn direct from the manufacturer in order to be sure that it is absolutely fresh. We will be pleased to accommodate dealers, if desired, by shipping direct to the customers upon the dealer's order and on his account. The order must be, however, for a full case (100 bricks) or for a half case (50 bricks). Loose or bottle spawn may be shipped from St. Paul in smaller quantities.

13. **Eastern Depot.** For the accommodation of our Eastern trade we endeavor to keep a supply of our spawn on hand at Mendenhall, Pa., whence shipments (in case lots only) can be made promptly to Eastern points.

AMERICAN SPAWN COMPANY,

St. Paul, Minn.