Preserve for Reference

Confidential to Dealers

WHOLESALE PRICE LIST
OF
MUSHROOM SPAWN

Effective January 1, 1919, subject to change without notice.

American Spore Culture Spawn, produced from the original spores of the best varieties, gathered, germinated and propagated 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 case lots of 160 bricks, net

$13.00 per 100 bricks

In less than full case lots an additional charge of 40 cents is made for the package.

Lambert's Pure Culture Spawn, produced by the tissue culture method, the spawn which has held the market for so many years, was first produced by the American Spawn Company, and has given universal satisfaction, in case lots of 160 bricks, net

$12.00 per 100 bricks

In less than full case lots an additional charge of 40 cents is made for the package.

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

Prices are f. o. b. St. Paul, or Mendenhall, Pa.

Terms, net cash, without discount.

December 2, 1918.

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 the 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 degs. 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. Positively the most vigorous and prolific spawn on the market. Each brick weighs from 1¼ to 1⅓ lbs., and will spawn from 8 to 10 square feet of beds. We keep on hand the white variety which is generally preferred in the markets, but can supply the cream or brown varieties, if desired. Per brick, 40 cts., 5 bricks, $.....postpaid; by express or freight, 10 bricks, $.....; 25 bricks, $.....; 100 bricks, $.....

Or, if it is desired to specify tissue culture spawn as heretofore:

Lambert's Pure Culture Spawn, produced from tissue cultures invigorated by frequent reference to spore stock. Each brick weighs from 1¼ to 1⅓ lbs. and will spawn from 8 to 10 square feet of beds. We keep on hand the white variety which is generally preferred in the markets, but can supply the cream or brown varieties, if desired. Per brick, 40 cts., 5 bricks, $.....postpaid; by express or freight, 10 bricks, $.....; 25 bricks, $.....; 100 bricks, $.....

3. **Cultural Directions.** 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, 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 oxidation transform it into cellulose, the form in which it is assimilated as food 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 10 or 12 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."

4. **Mushroom Spawn and its Manufacture.** Dealers are often questioned by their customers as to the meaning of the terms "English spawn, Flake spawn, Pure Culture Spawn, Spore Culture spawn," and the methods employed in their manufacture. For their information we will briefly review the evolution of the mushroom spawn processes and the improvements adopted in recent years:

Mushroom Spawn. Spawn, as the term is used commercially, includes the spawn proper, or **mycelium,** a felt or thread-like growth of a greyish white color, and its carrying medium, in **brick,** cake or other form, in which the mycelium is developed and preserved.

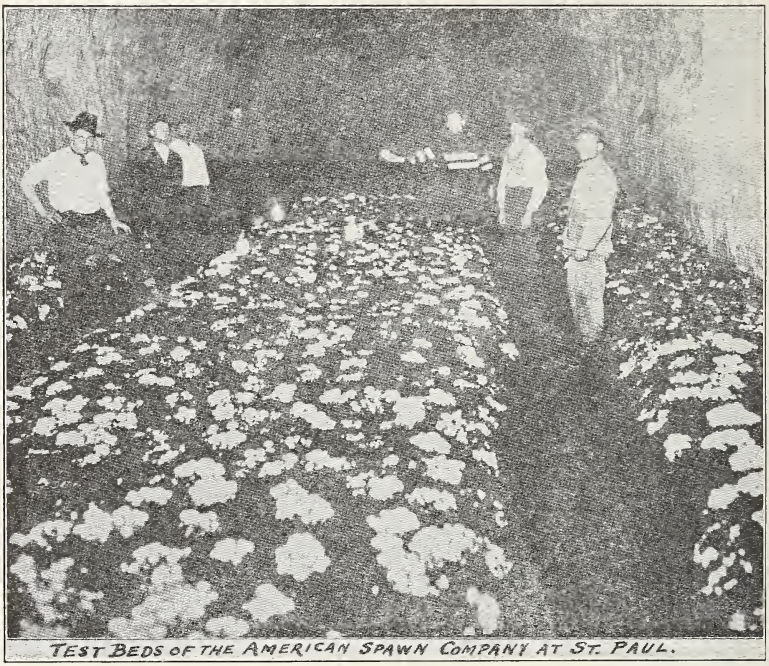
Mushroom Reproduction. In nature mushrooms of the Agaricus type are primarily reproduced by means of spores which drop from their gills at maturity. When germinated these spores produce the threadlike growth known as mycelium or spawn. In its further development, under certain conditions, the mycelium 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, milltrack 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, designated 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.

Pure Culture Spawn. The first important step in overcoming these uncertainties was made about fifteen years ago 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.



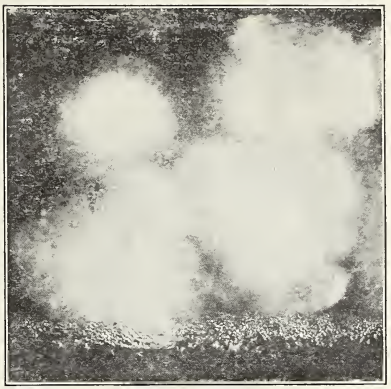
TEST BEDS OF THE AMERICAN SPAWN COMPANY AT ST. PAUL.

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.

Spore Culture Process. The problem to be solved involved (1) the

gathering of the spores in pure culture (aseptically), (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 spawnmaker 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 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 just 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.



Pure mycelium produced by direct germination of the spore

5. **American Spore Culture Spawn.** By the acquisition and operation of this process the American Spawn Company has not only eliminated at one stroke all the elements of uncertainty in the manufacture of its Pure Culture Spawn by the tissue culture method, but is in a position to take a most progressive, if not **the final step** in spawn making, **the introduction of original spore cultures in its bricks without intermediate transfer.** This is now being accomplished, and our bricks manufactured and shipped for the season 1919-1920, commencing with the shipments of next June or July, will be treated with spore cultures, except where tissue culture stock (Lambert's Pure Culture Spawn) treated under the old method is specified. 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 transfer.

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, 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. **Lambert's Pure Culture Spawn.** This is the spawn which was originated by the American Spawn Company and has held the market to the practical exclusion of all other forms of spawn for the last fourteen years. It is manufactured by the tissue culture method and, prior to the discovery of the spore process, was unquestionably the best spawn which could possibly be produced by the methods then known to science. The adoption of the spore method by the conservative manufacturers of "Lambert's Pure Culture Spawn" is therefore a sufficient guaranty to the trade that this method has been thoroughly tested and has proven to be a long step forward and a material improvement over the old tissue culture method. We realize, however, that many dealers and growers who have been satisfied with "Lambert's Pure Culture Spawn," or perhaps because of the slight difference in price between the two grades, will at least temporarily demand the old article. For that reason we are prepared to meet this demand at the reduced price quoted on the first page. Since the manufacture of tissue culture spawn will be limited hereafter to the remaining demand for the same, we would appreciate on the part of dealers seasonable notice of their prospective wants for that grade.

7. **Advertising.** Since most of the mushroom beds are made up in the late summer, fall and winter, it follows that the best time for dealers to advertise specially mushroom spawn is during each of the **last six months in the calendar year.** Advertising placed in the first six months will not produce as good returns.

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

9. **When to Order.** 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 from four to five 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.

10. **Bricks, Boxes, etc.** Each brick of "American Spore Culture Spawn," or of "Lambert's Pure Culture Spawn" measures 9 inches in

length, 5¼ inches in width, and is about 1½ inches thick. Our bricks weigh from 1¼ to 1⅓ pounds and are packed in strong boxes containing about 160 bricks. A full case weighs from 250 to 300 pounds, including package. 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 break packages or sell by weight. Half cases contain about 80 bricks.

11. **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" and of "Lambert's Pure 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.

12. **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 die for lack of nutriment unless it is at once planted in a prepared bed. When properly stored, mushroom spawn 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.

13. **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 accomodate 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 (160 bricks) or for a half case (80 bricks). We do not break packages.

14. **Eastern Depots.** For the accomodation 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, Minnesota.