

coming leaner from day to day, lose their fine looks, and finally become unfit for human food.\*

Martin Brandt's new method is said to have this advantage—that it does not change the shape, looks, and flavor of the fish, and prevents the development of fungus. It is done by compressed air. It may be continued for an unlimited period and be employed in the holds of vessels, railroad cars, warehouses, &c. For lining the rooms where the fish are kept metal or cement is used. The preserving medium weighs very little, as 1,000 cubic feet of compressed air weigh but 10 pounds.

In Mr. Brandt's warehouse a pipe runs along the wall from the floor to the ceiling, and back again, twisting several times, and finally ending on the floor. The machine or development apparatus consists of an iron cylinder connected with a so-called vacuum air-filter. The cylinder is filled with air compressed by about 200 atmospheric pressure. By means of the vacuum apparatus the machine is connected with the pipe in the warehouse, and the compressed air flows, after a valve has been opened, with great velocity through the filter and the pipes. New air is also introduced in the vacuum apparatus through cotton filters, thus purifying it of all matter apt to decay, and, united with the stream of compressed air, it continues to pass through the pipes. As the air expands it loses some of its warmth and is gradually cooling off. When let out of the pipes the air, which has now become quite cool, rises evenly throughout the room, and drives the warm air, filled with germs of fungi, through an opening in the ceiling. As the inventor claims, fish and meat can be kept fresh for an unlimited period in rooms whose air has been purified in the manner described above.

**197.—A LIST OF THE BLANK FORMS, CIRCULARS, AND MINOR PUBLICATIONS OF THE UNITED STATES FISH COMMISSION, FROM AUGUST 1, 1883, TO AUGUST 1, 1884.**

**By CHARLES W. SCUDDER.**

447. Blank for abstract of disbursements, by H. A. Gill, disbursing agent of the U. S. Fish Commission. 8 columns. August 8, 1883. 1 p., with filing on reverse. 43 by 56 cm.

448. Blank for acknowledging receipt of letters. September 6, 1883. 1 p. 20.5 by 25.5 cm.

449. Circular letter announcing that the sending of U. S. Fish Commission Bulletin signatures will be discontinued until receipts for former signatures are returned. Hektograph. September 8, 1883. 1 p. 20.5 by 25.5 cm.

\* This is true, although the process is not so rapid as some people imagine. We hardly think that any other method will entirely replace this one. In the first place, it is, wherever practicable, the cheapest method of preserving fish, and, in the second place, many consumers desire live fish (at least freshwater fish). The quantity of fish which is preserved in this matter is not small, but, on the contrary, enormous.—Editor, *Deutsche Fischerzeitung*.

† This is a continuation of the list in F. C. Bulletin, Vol. III, page 129.

450. Circular letter offering bound volume of the U. S. Fish Commission Bulletin in exchange for signatures sent. Hektograph. September 20, 1883. 1 p. 20.5 by 25.5 cm.
451. Postal to chief clerk of Smithsonian, requesting him to cancel Smithsonian letters. Hektograph. October 18, 1883. 1 p., and address on reverse. 7.5 by 13 cm.
452. Circular letter offering authors copies of their articles in the U. S. Fish Commission Bulletin. Hektograph. October 16, 1883. 1 p. 20.5 by 25.5 cm.
453. Notice to carp applicants that they will be supplied between November 1, 1884, and January 1, 1885. December 1, 1883. 1 p., and penalty on reverse. 7.5 by 13 cm.
454. Circular letter to State fish commissioners offering salmon, trout, and white-fish eggs. December 1, 1883. 1 p. 20 by 25.5 cm.
455. Blank for quarterly return of equipment stores. December 1, 1883. 1 p. 23.5 by 35 cm. Bound pamphlet. 47 pp. each.
456. Blank for quarterly return of navigation stores. December 1, 1883. 1 p. 24 by 26.5 cm. Bound pamphlet. 29 pp. each.
457. Blank for quarterly return of scientific stores. December 1, 1883. 1 p. 24 by 37 cm. Bound pamphlet. 30 pp. each.
458. Blank for quarterly return of engineers' stores. December 1, 1883. 1 p. 13.5 by 35.5 cm. Bound pamphlet. 10 pp. each.
459. Blank for ledger of equipment, navigation, and scientific stores. December 1, 1883. 26.5 by 36 cm. Bound pamphlet. 106 pp. each.
460. Circular letter transmitting account upon vouchers and instructions concerning signatures. Reprint of No. 343. December 7, 1883. 1 p. 20 by 25 cm.
461. Blank for thermometer ratings. Corrections according to standard thermometer of the U. S. Fish Commission. January 10, 1884. 1 p. 20 by 23 cm. Bound volume, 500 pp. each.
462. Envelope for the U. S. Commission of Fish and Fisheries, with penalty notice attached. January 4, 1884. 1 p. 11 by 26.5 cm.
463. Circular letter inclosing carp application. General distribution from November 1 to January 1. January 10, 1884. 1 p. 13 by 20 cm.
464. Postal receipt for U. S. Fish Commission publications. January 10, 1884. 1 p., and return address with penalty notice on reverse. 7.5 by 13 cm.
465. Blank for requisition of articles or labor. Revise of No. 327. January 16, 1884. 1 p. 20 by 24.5 cm.
466. Circular letters to Wood's Holl subscribers, giving the advantage of a laboratory at Wood's Holl and asking for the \$1,000 promised. Hektograph. September 19, 1882. 1 p. 20 by 32 cm.
467. Circular to Alpena employes, giving instructions regarding the taking of white-fish eggs. November 1, 1883. 1 p. 14 by 28 cm.
468. Circular letter announcing shipment of eggs from Northville or Alpena Stations and inclosing No. 469. December 1, 1883. 1 p. 21.5 by 28 cm.
469. Blank for record of eggs shipped from Northville, Mich. 16 items and recapitulation. December 1, 1883. 1 p. 21.5 by 29 cm.
470. Circular letter to carp applicants announcing that the carp supply is exhausted, and that carp will be furnished next fall. Hektograph. January 16, 1884. 1 p. 20 by 25 cm.
471. Blank book for recording the catch of salmon and alewives. 8 columns per folio. April 16, 1884. 1 folio 17 by 21 cm.
472. Notice to foreign correspondents that they may acknowledge receipt of Fish Commission Bulletins on post-cards of their own country. Hektograph. February 1, 1884. 1 p., on back of No. 413. 12 by 20 cm.
473. Blank for certificate that bills are correct statements of expenses incurred in service of the U. S. Fish Commission. March 1, 1884. 1 p. 8 by 21 cm.
474. Specifications for the paddle-wheel steam seine-boat Canvas-Back. February, 1882. 12 pp., each 21.5 by 28 cm.

475. Blank for recording applications for fish. 13 columns per folio. March 31, 1884. 1 p. 25 by 35 cm. Bound volume, 150 folios each.
476. Shipping tag for U. S. Fish Commission stations. 3 items. April 19, 1884. 1 p. 8 by 16 cm.
477. Blank for record of shipments of fish and eggs from U. S. Fish Commission stations. 10 columns. April 19, 1884. 1 p. 21.5 by 36 cm.
478. Blank for receipts of fish and eggs at U. S. Fish Commission stations. 12 columns. April 19, 1884. 1 p. 21.5 by 15.5 cm.
479. Blank for daily register of eggs received and hatched at U. S. Fish Commission stations. 21 columns per folio. April 19, 1884. 1 folio 36 by 43 cm.
480. Blank for record of air and water temperatures at U. S. Fish Commission stations. 12 columns. April 19, 1884. 1 p. 22 by 36 cm.
481. Blank for abstract of disbursements, by H. A. Gill, disbursing agent of the U. S. Fish Commission. 6 columns. April 11, 1884. 1 p. 20 by 32.5 cm.
482. Blank letter for transmitting drafts on Assistant Treasurer of the United States. April 21, 1884. 1 p. 20.5 by 25.5 cm.
483. Blank postal declining to furnish U. S. Fish Commission Reports, and giving prices charged by the Public Printer for them. April 23, 1884. 1 p., and penalty notice on reverse. 8 by 13 cm.
484. Return envelope, Herbert A. Gill, disbursing agent, with penalty notice attached. April 23, 1884. 1 p. 9 by 21.5 cm.
485. Blank for receipt for check from Herbert A. Gill on Assistant Treasurer of the United States. May 27, 1884. 1 p. 7.5 by 19.5.
486. Envelope for U. S. Commissioner of Fish and Fisheries, with penalty notice attached. May 27, 1884. 1 p. 9 by 21.5 cm.
487. Circular letter ordering that no liabilities shall be incurred by the U. S. Fish Commission, without detailed requisition. Hektograph. May 26, 1884. 20.5 by 26.5 cm.
488. Circular letter offering duplicate specimens of marine invertebrates collected by the U. S. Fish Commission. Hektograph. June 20, 1884. 2 pp. 20.5 by 25.5 cm.
489. Blank for record of temperature and specific gravity on steamer Albatross. 12 columns. July 11, 1884. 1 p. 25.5 by 41 cm.
490. Circular letter ordering all articles wanted from the navy yards to be obtained on requisition. Hektograph. April 3, 1884. 1 p. 20.5 by 25.5 cm.
491. Circular letter forwarding certificate of diploma of honor awarded by the London Fisheries Exhibition in 1883. January 25, 1884. 1 p. 20 by 25 cm.
492. Circular letter forwarding silver medal awarded by London Fisheries Exhibition in 1883. January 25, 1884. 1 p. 20 by 25 cm.
493. Blank for receipt for silver medal awarded by London Fisheries Exhibition in 1883. January 25, 1884. 1 p. 8.5 by 19.5 cm.
494. Circular letter forwarding gold medal awarded by London Fisheries Exhibition in 1883. January 25, 1884. 1 p. 20 by 25 cm.
495. Blank for receipt for gold medal awarded by London Fisheries Exhibition in 1883. January 25, 1884. 1 p. 8.5 by 19.5 cm.
496. Circular letter of invitation to exhibition of California and Oregon salmon and trout at Armory Building. March 19, 1884. 1 p. 8 by 12.5 cm.
497. Circular letter of invitation to exhibition of Atlantic and Pacific slope salmon at Armory Building. April 2, 1884. 1 p. 13 by 19.5 cm.
498. Circular letter asking information regarding the whale fisheries. May 30, 1884. 1 p. 19 by 24.5 cm.
499. Circular letter transmitting Fish Commission Report. June 18, 1884. 1 p. 19.5 by 25.5 cm.
500. Blank for receipt for Fish Commission Report. June 18, 1884. 1 p. 12.5 by 19.5 cm.

## INDEX TO THE FOREGOING LIST OF BLANKS, CIRCULARS, ETC.

[NOTE.—The references are to numbers, not to pages.]

Abstract of disbursements.....	447, 481	Marine invertebrates, offer of.....	488
Account, transmittal of.....	460	Medals at London Exhibition.....	492, 493, 494, 495
Acknowledgment of letters.....	448	Navigation stores, return of.....	456
Albatross temperature blanks.....	489	Navy yard requisitions.....	490
Alewives, record of catch.....	471	Publication, receipt for.....	464
Alpena employes, instructions to..	467	Quarterly return of property.....	455, 456, 457, 458, 459
Announcement of shipment of eggs..	468	Rating of thermometers.....	461
Applications for fish, record of....	475	Receipt for Bulletin signature	
Bulletin articles offered to authors..	452	wanted.....	449
Bulletin, how foreigners should re-		Receipt for check.....	485
ceipt for.....	472	Receipt for Fish Commission Report	500
Bulletin, offer of.....	450	Receipt of fish and eggs.....	478
Bulletin signature receipt wanted..	449	Record of applications for fish....	475
Bulletin signatures discontinued..	449	Record of catch of salmon and ale-	
Cancellation of Smithsonian letters	451	wives.....	471
Canvas-back, specifications for....	474	Record of shipment of eggs.....	469
Carp application, inclosed.....	463	Record of shipment of fish.....	477
Carp distribution announced.....	453	Record of temperature.....	480
Carp supply exhausted.....	470	Register of eggs hatched.....	479
Certificate that bills are correct...	473	Report of Fish Commissioner, de-	
Check receipt.....	485	clining to furnish.....	483
Diploma of honor, London Exhi-		Report of Fish Commissioner, price	
bition.....	491	of.....	483
Disbursements, abstract of.....	447, 481	Report of Fish Commissioner trans-	
Drafts, transmittal of.....	482	mitted.....	499
Eggs, announcement of.....	468	Requisition blank.....	465
Eggs, receipt for.....	478	Requisition from navy yard.....	490
Eggs received, register of.....	479	Salmon eggs, offer of.....	454
Eggs, record of shipment of.....	469	Salmon exhibition, invitation to..	496, 497
Eggs, shipment of.....	477	Salmon, record of catch.....	471
Engineers' stores, return of.....	458	Scientific stores, return of.....	457
Envelope, penalty, No. 8½.....	486	Shipping tag.....	476
Envelope, penalty, No. 10.....	462	Smithsonian letters, cancellation of	451
Envelope, penalty, return, H.A. Gill	484	Temperature blank.....	489
Equipment stores, return of.....	455	Temperature record.....	480
Instructions in taking whitefish		Thermometer ratings.....	461
eggs.....	467	Transmittal of accounts.....	460
Invitation to salmon and trout ex-		Transmittal of drafts.....	482
hibition.....	496	Transmittal of Fish Commission	
Invitation to salmon exhibition...	497	Report.....	499
Ledger of stores.....	459	Trout eggs, offer of.....	454
Liabilities of Fish Commission....	487	Whale fisheries inquiry.....	498
London Exhibition, diploma of		Whitefish eggs, offer of.....	454
honor.....	491	Wood's Holl, subscription wanted..	466
London Exhibition medal.....	492, 493, 494, 495		