THE NATIONAL BEEKEEPERS' DIRECTORY

THE NATIONAL

BEEKEEPERS' DIRECTORY.

CONTAINING A CLASSIFIED LIST OF THE BEEKEEPERS OF THE UNITED STATES AND CANADA; WITH ESSAYS AND HINTS REGARDING THE SUCCESSFUL MANAGEMENT OF THE APIARY.

COMPILED BY
HENRY ALLEY,
WENHAM, MASS.

PRINTED AT
SALEM PRESS PUBLISHING AND PRINTING CO.,
SALEM, MASS.
1889.

THE NATIONAL

BEEKEEPERS' DIRECTORY.

CONTAINING A CLASSIFIED LIST OF THE BEEKEEPERS OF THE UNITED STATES AND CANADA; WITH ESSAYS AND HINTS REGARDING THE SUCCESSFUL MANAGEMENT OF THE APIARY.

COMPILED BY
HENRY ALLEY,
WENHAM, MASS.

PRINTED AT
SALEM PRESS PUBLISHING AND PRINTING CO.,
SALEM, MASS.
1889.

PREFACE.

TO THE SUBSCRIBERS OF THE "BEEKEEPERS' DIRECTORY:"

When we undertook this work it was our intention to have it in the hands of each subscriber as early as the middle of January. Several things have caused an unexpected delay.

It was also our intention to give some valuable statistics regarding bee cultnre. This we are not able to do on account of the incompleteness of the blanks returned. Many of those who returned them did not reply to any of the questions. Of the 10,000 blanks sent out, less than 3,000 were returned.

The average number of colonies kept by those who did return the blanks are twenty. Number of pounds of honey per colony was not far from twenty-five pounds per season.

THE

BEEKEEPERS' DIRECTORY.

Abbey, P. C., Essex, Vt.
Abbott, E. C., St. Joseph, Mo.
Adams, Jos., 2109 N. Campbell St., Springfield, Mo.
Adams, Wm. S., Greys, Maryland. Physician.
Adams, George, Hamden, N. Y.
Adams, R., Woodville, Ont., Can.
Adams, Geo. C., Brownsville, Vt.
Adams, F. M., Williamson, N. Y.
Adams, Geo., Haledon, N. J.
Adams, Joseph, No. Springfield, Mo.
Adams, Wm., Lebanon, Ohio.
Adams, H. A., Box 27, Armas, Ind.
Aikin, B. F., Freetown, Mass.
Akerly, S. M., Newburgh, N. Y.
Akerman, P., Chester, N. J.
Albee, L. W., So. Charlestown, N. H.
Albee, Wm. L., So. Charlestown, N. H. Dentist.
Albeston, S. L., Roslyn, L. I., N. Y.
Aldeffer, F. F., Harleysville, Pa.
Aldrich, Lyman P., Westboro, Mass.
Aldrich, Ned., Westboro, Mass.
Aldrich, Ned. S., Westboro, Mass.
Aldrich, H. A., Harmony, R. I.
Aldrich, Cyrus, Cochesett, Mass.
Alexander, Mrs. Sylvester B., West Hartford, Vt.

Alexander, E. W., Esperance, N. Y.
Alexander, J. B., Hartford City, Ind.
Alger, Peter C., Otterville, Ont., Can.
Allen, L., Loyal, Wis.
Allen, Joseph, Terre Haute, Henderson Co., Ill. Farmer.
Allen, Nath'l T., West Newton, Mass. School teacher.
Allen, A., Prospect, N. Y.
Allen, Geo. A., 108 Rowe St., Rochester, N. Y.
Allen, V. N., Brady, Ohio.
Allen, E. A., 262 Meridian street, East Boston, Mass.
Allen, J. W. B., Thrifty, Texas.
Allen, W. C., Bison, Tenn.
Allen, John E., Westford, Vt.
Allen, Herman A., Milton, Vt.
Allen, Jos., Holyoke, Mass.
Allen, W. H., Trumansburg, N. Y.
Allen, W. K., McLean, N. Y.
Allen, A. H., Portland, Conn.
Allen, E. J., Petersburg, N. Y.
Allen, A. J., Pine Meadow, Conn.
Allen, John, Westford, Vt.
Allen, Watson, Bernardsville, N. J.
Allis, E. W., Adrian, Mich.
Alvis, Henry J., Montrose, Iowa.
Alvord, J. B., Huntingdon, Mass.
Ames, Orlando, Somerville, Mass.
Ames, Wm. D., East Dorset, Vt.
Ames, A. E., Claremont, Va.
Anderberg, Charles J., South Falls, Dak.
Anderson, Louis, Bloomsburg, N. J.
Anderson, Washington B, Cobleyville, Mich. Physician.
Anderson, Mrs. H. B., Humansville, Mo.
Anderson, Peter C., Otterville, Ont., Can.
Andrews & Lockhart, Patten's Mills, N. Y. Carniolan queens.

Andrews, John, Pattens Mills, N. Y.
Andrews, T. P., Farina, Ill.
Andrews, Dea. E. H., Gaylordsville, Conn.
Andrews, Sanford, Bernardstown, Mass.
Annis, Edmond, Dutton Station, Mich.
Armitage, M., Goodrich, Texas.
Arnold, Alice L., Norwich, N. Y.
Arnold, Thomas T., Comorn, Va. Physician.
Arnts, C. J., Meshoppen, Pa.
Arundell, T. B., Senega, Cal.
Ashley, F. S., No. Amherst, Mass.
Aspergreen, Adolph, Saronville, Neb.
Atchley, Jennie, Farmersville, Texas Beekeeper, also dealer in smokers and foundation.
Atsatt, J. P., Mattapoisett, Mass.
Auld, J. R., New Hartford, N. Y.
Austin, A. H., Suffield, Conn.
Austin, W. J., Chittenango, N. Y.
Austin, Martin, Fairport, N. Y.
Averill, Mary A., North Andover, Mass.
Avery, A. D., London Bridge, Va.
Avery, J. B., Clifton, Kansas.
Avery, B. F., Middleton, Mass.
Avery, John B., Stittville, N. Y.

Bachelder, A. C., West Fort Ann, N. Y.
Badlam, W. H., Dorchester, Mass.
Badgar, Benj. F., Charlestown, Mass.
Badger, Mrs. A. M., Everett, Mass.
Baer, Ezra, Dixon, Ill.
Bagby, F. E., La Belle, Mo.
Bailey, F. G., Newton Falls, Ohio.
Baker, Dennis, Eustis, Florida.
Baker, Adam, Old Tacomy, Washington Territory.

Baker, Burt, Carlisle, Mich.
Baker, D., Eustis, Fla.
Baldridge, C. J., Kendaia, N. Y.
Baldridge, M. M., St. Charles, Ill.
Baldwin, G. G., Port Huron, Mich.
Ball, Alonzo, Clinton, Mass.
Ballard, W. & W., Hampden, Ohio.
Balmer, J. H., Paris, Ill.
Bamberger, Ed. M., 908 Saratoga St., Baltimore, Md.
Banfield, D. E., Lake Village, N. H.
Banton, Boyton, Freedom, Maine.
Baptie, James, Springville, Ont., Ca.
Barr, W. H., Whigville, Ohio. Dealer in supplies.
Barb, B. F., Joetta, Hancock Co., Ill. Blacksmith.
Barb, J. S., Bristolville, Ohio. Dealer in beekeepers' supplies.
Barber, Gro., Mansfield, Ont., Ca.
Barber, Ira, De Kalb Junction, N. Y.
Barford, John, 90 Davis St., Atlanta, Ga.
Bargo, David T., Danville, Ind.
Barker, Mrs. Geo. M., Natick, Mass.
Barnard, P. A., Cottage Grove, Ind.
Barnes, Wm. C., Southbridge, Mass.
Barnes, Arthur, Ames, N. Y.
Barnes, J. E., Pardoe, Pa.
Barnes, Daniel, Greenville, N. H.
Barnum, Willis M., Angelica, N. Y.
Barr, O. S., Groveland, Mass.
Barrett, A. E. Coleman Station, N. Y.
Barrett, P. G., Hood River, Oregon.
Barrett, Fred C., Fort Wayne, Ind. Carpenter.
Barrett, H. N., Charlton, N. Y.
Barrett, John, Cherry Village, Ohio.
Bartlett, Mrs. H. S., Crompton, R. I.
Bartlett, W. E., No. Blandford, Mass.

Barton, J. F., 220 E. Randolph St., Chicago, Ill.
Barton, Samuel, So. America, Ill.
Barrows, O. B., Marshalltown, Iowa.
Bartram, L. H., Sharon, Conn.
Bassett, Mrs. M. F., Burr Oak, Otoe Co., Nebraska.
Bassett, Fred., East Kendall, N. Y.
Basson, L. D., West Charleston, Vt.
Bates, Samuel, Stockton, Minn. Small fruit culture.
Bates, W. K., Box 127, Stockton, Minn.
Bates, S., Stockton, Minn.
Bean, A. A., Chester, N. H.
Beck, J. H., Hermon, Pa.
Becker, A., Sandwich, Ill.
Beebe, Edward B., Oneida, N. Y.
Beebe, H. M., Simonsville, Vt.
Beech, G. A., Quitman, Mo.
Beecham, Horace K., Williamsburg, Mich.
Beecher, H. R., West Norfolk, Conn.
Beland, Arthur, No. Springfield, Mo.
Belcher, Edmond K., Randolph, Mass.
Bemis, L. C., Athol, Mass.
Benjamin, S. W., Shirley, Mass.
Benjamin, John, Deposit, N. Y.
Bennett, Shubal, Westmoreland, N. H.
Bennett, Geo. W., Acushnet, Mass.
Benson, Sidney T., Falconer, N. Y.
Bently, W. L., Danville, Ill.
Bercaw, T. W., Fostoria, Ohio. Rubber stamps.
Berdan, Albert, Luton, Ont. Can.
Bermer, I. F., New Lisbon, Ohio. Pres. First National Bank
Berry, F. D., So. Oxford, N. Y.
Berwick, C., Monterey, Cal.
Best, A. O., Savannah, Ga.
Best, D. E., Best, Pa.

Bichler, George, Chillicothe, Ohio.
Bidwell, W. W., Jersey City, N. J.
Biddle, J. S., Joysburg, Pa.
Bierman, Henry J., Princeton, Ill.
Bill, A. G., Danielsonville, Conn.
Bill, Frank P., Bill Hill, Conn.
Bingham, T. F., Abronia, Mich.
Bishop, Albert W., Olanthe, Kans.
Bitgood, Frank S., Voluntown, Conn.
Bixler, Charles R., Brooks, Iowa.
Black, G. D., Brandon, Iowa.
Blackman, James H., Oxford, N. Y.
Blair, Joseph, St. Fay, Quebec.
Blair, J. A., Carlinville, Ill.
Blanton, O. M., Greenville, Miss. Physician.
Blecka, F. K., 14 Grove Ave., Elgin, Ill.
Blichner, Jacob, Hermon, Pa.
Bliss, C. M., Fox Lake, Wis.
Bliss, Francis A., Box 41, Pawtucket, R. I.
Bliss, G. A., Moscow, Mich.
Blodgett, John W., Flag Springs, Mo.
Blout, Frank G., Pana, Ill.
Blowers, G. A., Sandy Ridge, Pa.
Bodge, Albion R., Dexter, Me.
Bodge, J. S., La Porte, Ind.
Bogart. C., Stone Bridge, N. Y.
Bolin, J. W., Concord Church, W. Va.
Bolinger, F., Palestine, Ill.
Boone, E. A., Shelbyville, Maine.
Booth, Mrs. Levi, Box 2251, Denver, Col.
Booth, Henry B., Chester, Vt.
Borden, Joseph, Tiosa, Ind.
Boston, James, Pawnee City, Nebraska. Horticulturist.
Bostwick, John R., New Milford, Conn. Mixed business.

Bostwick, W. S., Cornwallville, N. Y.
Bosworth, D. L., Wilbraham, Mass.
Bosworth, Jas., Taunton, Mass.
Bosworth, George W., Little Compton, R. I.
Bosworth, Dwight L., Wilbraham, Mass.
Boude, John C., Lexington, Va.
Boulden, C. S., Cyclone, Ind.
Bourguin, John H., North Branch, Minn.
Bourke, John, Down's Chapel, Del.
Bovie, I. W., Hoosick Falls, N. Y.
Bowdrich, F. C., Brookline, Mass.
Bowen, Lafayette, Springville, N. Y.
Bower, J. D., Prospect, Pa.
Bowerman, Hannah, Loyal, Wis.
Bowles, E., Grant City, Pa.
Bowman, J. C., Holyoke, Mass.
Boyd, E. A., Cannonsville, N. Y.
Boyd, E. C., Wilmington, Vt.
Brackett, Daniel, Pittsfield, Me.
Braden, J. E., Ravenwood, Mo.
Brader, H. S., 1089 Fayette St., Baltimore, Md.
Bradford, W. J., Marietta, Cal.
Bradley, A., Lee, Mass.
Bradshaw, A., Dallas, Texas.
Bread, D. A., Munroe, La.
Brepp, J. H., Glen Rock, Pa.
Brewster, Fred., Belmont, Maine. Carpenter.
Bricker, Robert A., Slate Lick, Pa.
Bridger, Theodore L., Brookline, N. H. Engineer.
Bridsall, W. M., Bangall, N. Y.
Brigham, George W., Roxbury, Vt.
Briggs, Edgar A., Manchester Bridge, N. Y.
Briggs, Chas. J., West Exeter, N. Y.
Briggs, S. P., Stephentown, N. Y.

Briggs, S. A., Verona, Mo.
Briggs, L. E., Taunton, Mass.
Briggs, Charles R., Dighton, Mass.
Brimmer, D., Hoosick, N. Y.
Broadbent, George C., Factoryville, Pa.
Brodie, John, London, West Canada.
Bronson, C. A., Ashfield, Mass.
Brookmyers, H. S., Clyde, Ohio.
Brooks, G. B., No. Grafton, Mass.
Brooks, C. L., Deanville, N. Y.
Brooks, Ella M., No. Grafton, Mass.
Brosius, Jacob, Ohl, Pa.
Broughton, F., Black Jack, Mo.
Brower, John, Lapeer City, Mich.
Brown, D. K., Box 275, Manchester, N. H.
Brown, Uriah, Niagara Falls, Ontario.
Brown, Cornelius, Box 61, Dayton, Ohio.
Brown, Grant, Orwell, Ohio. Italian queens.
Brown, J. P. H., Augusta, Ga. Queens, bees and supplies.
Brown, W. L., Harrison, N. Y.
Brown, H. D., Hopkinton, Mass.
Brown, W. L., Augusta, Maine.
Brown, Arthur F., Huntington, Fla.
Brown, Mrs. E., Tecumseh, Mich.
Brown, J. Arthur, Rye, N. H.
Brown, H. R., Brattleboro, Vt.
Brown, Wells B., Fennisburg, N. Y.
Brown, D. C., Stamford, Conn.
Brunson, G. S., St. Albans, Vt.
Bruso, Chas., Worcester, Mass.
Buchanan, Milton, Pulaski, Pa.
Buchanan, J., Florence, W. Va.
Buchanan, T. R., Horseheads, N. Y.
Buck, Mrs. Annie E., New Milford, Conn.

Buck, Jno., Jr., No. Adams, Mass.
Buck, D. C., Dundee, Mich.
Buckholder, W. S., Otterville, Ont., Can.
Budlong, Mrs. E. M., 101 So. Hill St., Los Angeles, Cal.
Budlong, Thos. J., Natick, R. I.
Buesenburg, Isaac, Menton, Ind.
Bull, Joshua, Seymour, Wis.
Bullard, W. D., Hampden, Ohio.
Bullany, Thos. E., Schuylerville, N. Y.
Bunch, Chas. A., La Paz, Ind.
Bundy, Wm., Hitchcock, Ind.
Bunker, Mrs. A. E., Greensburg, Ind.
Burgers, C. M., Council Bluffs, Iowa. Dealer in hives and frames, principally.
Burguine, J. H., Uth Branch, Minn.
Burhans, G. A., Cooksburg, N. Y.
Burkhart, W. S., Springs, Va.
Burmaster, F. C., Irving, N. Y.
Burnes, Joe. E., Flatonia, Texas.
Burnham, L. E., Essex, Mass.
Burns, James, Ohl, Pa.
Burroughs, C. W. M., Hillsborough, N. J.
Burr, Miss A. S., Westport, Conn.
Burris, Mrs. J. W., Uvalde, Texas.
Burress, J. M., Glen Rock, Neb.
Burt, Taylor, Woodcock, Pa.
Burt, H., Portland, Oregon.
Burtis, H. O., Warren, R. I.
Burton, S., Eureka, Ills.
Bush, H. W., West Brookfield, Mass.
Bushnell, Frank, Gilbertsville, N. Y.
Buswell, Turner, Solon, Maine.
Butler, N., Glen Ridge, N. J.
Butler, Thomas, Chesterfield, N. H.

Butman, C., Plymouth, Maine.
Butterfield, J., Saxonville, N. Y.
Butterfield, Frank R., Haddam, Kansas.
Butterford, Amos, Binghamton, N. Y.
Butts, C. E., St. Charles, Iowa.
Byard, Andrew A.. West Chesterfield, N. H.
Byard, John L., Townsend, Vt.
Byerly, David, Ohl, Pa.

Cairns, Wm., Rockland, N. Y.
Caldwell, Rodney J., Boonville, Iowa.
Caldwell, A. S., Charlotte, N. C.
Calvelage, G. B., Haughville, Ind.
Calvert, L. C., Poplar Flat, Ky. Carpenter.
Cameron, James, Homer, Ont., Can.
Cameron, J. R., Angelica, N. Y.
Campbell, J. H., Cowling, Ill.
Campbell, Chas. E., Columbus, N. Y.
Campbell, Joseph A., Deland, Ill.
Canary, I. A. L., Brownsburg, Ind.
Canney, Thos., Poultney, Vt.
Capson, Henry, Uxbridge, Mass.
Capson, M., Uxbridge, Mass.
Carbino, Lewis, Potsdam, N. Y.
Carle, Luther, Glen, Mont. Co., N. Y.
Carlill, Ben., Casino, New So. Wales, Aust.
Carpenter, A. S., Gouveneur, N. Y.
Carpenter, W. W., Granville, O.
Carr, F. B., Acushnet, Mass.
Carroll, B. F., Dresden, Texas.
Carson, Alexander, Mt. Vernon, N. H.
Carter, Albert, Carrollton, Mo.
Cartwell, W. A., Crowley, Texas.
Carver, H. J., Chicopee Falls, Mass.

Carver, Theodore, Mansfield, Mass.
Cary, Wm. W., Colraine, Mass.
Cary, Elmer C., Box 147, New York City.
Cassady, D. B., Litchfield, Minn.
Case, Alfred C., Hortonville, Mass.
Case, Cassius M., Portland, N. Y.
Case, Dr. W. W., Zenas, Ind.
Case, C. O., New Britain, Conn.
Case, L. A., Newcomerstown, Ohio.
Cass, A. D., Hubbardston, Mass.
Caulkins, Mrs. W. O., Constantia, Ohio.
Cauthen, W. S., Pleasant Hill, S. C. Dealer in beekeepers' supplies.
Caverly, John A., 381 Merrimack St., Manchester, N. H.
Cedarholm, J. P., Galesburg, Mo.
Chalfant, W. A., Danford, Ohio.
Chamberlin, S. M., Woodville, N. H.
Chapin, Irwin, 173 East Market St., Wilkes Barre, Pa.
Chapin, Irwin, Town Hill, Pa.
Chaplin, Joseph, No. Manchester, Ind. Dealer in poultry.
Chapman, Chas., Watkins, N. Y.
Chapman, Geo., Oxford, N. Y.
Chapman, H. C., Versailles, N. Y.
Chapman, Justice, Woodville, Mich.
Chase, Frank, Springville, N. Y.
Chase, H. B., Hickory, N. C.
Chase, J. K., Hortonville, Mass.
Chase, W. E., Warwick, Mass.
Chatterton, E. S., Acworth, N. H.
Cheney, E. P., White Store, N. Y.
Chetfield, I. J., Birmingham, Mich.
Chigan, J. B., Youngstown, Ohio.
Chipais, J. C., St. Dennis, Quebec, Can.
Chipman, Wm. F., Mt. Carmel, Ill.

Chipman, W. H., Hope Valley, R. I.
Choate, Mrs. O., Morrisville, Vt.
Cholwell, G., Red Hook, N. Y.
Church, B. C., Jenison, Mich.
Churchill, J. H., Pawling, N. Y.
Clare, F. P., Oliver's Ferry, Ont., Can.
Clark, Geo., Edson, Northampton, Mass. Jeweler.
Clark, D. R., Summit, N. Y.
Clark, D. S., Down's Chapel, Del.
Clark, Wm. E., Oriskany, N. Y. Dealer in apiarian supplies.
Clark, L. M., Tabor, Ind.
Clark, W. F., Guelph, Ont., Can.
Clark, Geo. E., Northampton, Mass.
Clark, W. E., Oriskany, N. Y.
Clark, Irwin G., Victory, Ill.
Clehaffer, Jos., Lee, Mass.
Clemons, Henry M., Greenburg, Ind.
Close, Wm. E., Greenwich, Conn.
Clough, V. W., Geneseo, Ill.
Clute, A. E., West Troy, N. Y.
Cochsenson, Sylvester, Primrose, Ohio.
Coe, Asher M., Coe Ridge, Ohio.
Coe, F. M., Litchfield, Conn.
Coffin, Horace, Salem, Mass.
Cogan, A. J., Bon Homme, Dak.
Cole, Albert M., Providence, R. I.
Cole, Filmore, Lima, Ohio.
Cole, Mrs. H. J., East Freedom, N. H.
Cole, Miss Susie, Carmel, N. Y.
Cole, Warren, West Boxford, Mass.
Coleman, John, Box 392, Altoona, Pa.
Coleman, Nathaniel, West Falmouth, Mass.
Collman, Chas. B., Corning, Iowa.

Colman, W. S., Newburyport, Mass.
Colwell, Samuel G., Providence, R. I.
Combs, Samuel, Foxboro, Mass.
Comforth, E., Thorndike, Maine.
Compton, Daniel, Troy, Pa. Carriage maker.
Compton, J. H., Cowling, Ill.
Compton, O. S., Glenwood, Mo.
Comstock, Flora, Morrilton, Ark.
Comstock, T. K., Morrilton, Ark.
Conklin, Byron H., Fairport, N. Y.
Connell, D. E. Cooperstown, Ills.
Connell, Wm. C., Davidson River, N. C.
Connelly, R. A., Beaver Lick, Ky.
Conner, C. W., Ashton, Iowa. Poultry breeder.
Conway, Thos. D., Guelph, Ont., Ca.
Cook, C. L., Glen Rock, Neb.
Cook, H. W., Athenton, Ont., Ca.
Cook, Henry, Columbia City, Ind.
Cook, Wm., Waterliet, Mich.
Coppin, Aaron, Wenona, Ill.
Corbino, Lewis, Potsdam, N. Y.
Corey, B., Sutton, Nebraska.
Corey, Mrs. Betsey, Sutton, Nebraska.
Corey, Luther, Yorkshire, N. Y.
Corly, David, Milburn, New Jersey.
Corneil, S., Lindsay, Ont., Ca.
Cosgriff, J. E., So. Burlington, Vt.
Costellow, C. W., Waterboro, Maine. Beekeepers' supplies.
Cotton, John, Burnt Hills, N. Y.
Cottrell, N. E., Fayette, Ohio.
Coverdale, F., Welton, Iowa. Farmer and stock raiser.
Coverly, John A., Manchester, N. H.
Cowe, John, Goodland, Mich.

Craig, Andrew, Empire, Dak.
Craig, David, Macleay, Oregon.
Craig, Rev. S. L., Oakland, Ohio.
Cram, O. O., Bradford, N. H.
Cramer, E. D., White Haven, Pa.
Crandell, Frank P., Adamsville, R. I.
Crane, W. P., Charlton, N. Y.
Crawford, A. O., So. Weymouth, Mass. Labels, paper boxes and glass jars.
Cribbs, H. A., Heshbon, Pa.
Crim, W. W., Pekin, Indiana.
Cripe, H. J., Patton, Ind.
Crocker, R. L., Lockport, N. Y. Wakeman & Crocker's box-constructor.
Crockett, W. A., Sterling, N. Y.
Croft, Wm., Hastings, Nebraska.
Crosby, M. M., Kennedy, N. Y.
Crosier, F., Readsboro, Vt.
Cross, F. C., Montague, Mass.
Cross, L. B., Adams, Mass.
Culler, J. R., Wooster, Ohio.
Culliman, W. J., Mt. Auburn, Iowa.
Cullison, R. M., Adel, Iowa.
Cumins, A. W., Woodstock, Ill.
Cunary, I. A. L., Brownsburg, Ind.
Cunningham, J. M., Carson, Iowa.
Currier, A. F., Duplain, Mich. Physician.
Currier, W. S., Warner, N. H.
Curry, Mrs. R. J., Canton, Ill.
Curry, Wm., Renfrew, Pa.
Curtis, F. Wm., Stanberry, Mo.
Curtis, H. R., Box 127, Coos, N. H.
Curtis, Stephen C., Curtisville, Mass.
Cushman, Samuel, Pawtucket, R. I.
Cutter, Sarah E., Marlboro, Mass.

Dahl, T. J., Stoughton, Wis.
Dalberg, Lewis, Oxford Furnace, N. J.
Dalby, Israel C., No. Scituate, Mass.
Dalton, G. W., Enola, Ark.
Damon, C. F., Pawtucket, R. I.
Damon, Miss Fannie C., Ashby, Mass.
Damon, Reubena, East Middlebury, Vt.
Daniels, Mrs. L. L., West Medway, Mass.
Daniels, Wm., Stoystown, Pa.
Darby, J. O., Florence, Texas.
Darke, I. W., Columbia, Texas.
Darling, F. M., Oregon City, Oregon.
Darst, Cyrus, Squak, King Co., Wash. Ter.
Davidson, J. C., Wampum, Pa.
Davies, Mrs. S. P., Nannett, N. Y.
Davis, A. E., Jefferson City, Mo.
Davis, Alfred, Mineral Point, Ohio.
Davis, Carrie, Appleton, Wis.
Davis, E. A., Pittsfield, N. H.
Davis, Henry C., Barnstable, Mass.
Davis, Hilas D., Bradford, Vt.
Davis, I. W., No. Petersburg, N. Y.
Davis, L. D., Newport, R. I.
Davis, Nathan, Somerset, Mass.
Davis, R. T., Orlando, Ark.
Dawson, L., Champaign, Ill.
Day, A. C., East Winfield, Maine.
Day, Mrs. Annie (Buckeye), Phoenix, Arizona.
Day, G. A., 92 Easton Ave., Gloucester, Mass.
Day, J. S., Mt. Pleasant, Utah Ter.
Deagle, Middleport, Ont., Can.
Deahl, H. P., Berryville, Va. Deals in sections and crates.
Dean, A. G., Berrien Centre, Mich.
Dean, David R., Oakham, Mass.

Dean, W. H., Burke, N. Y.
Deek, C. A., Staffordsville, Va.
Deer, C. W., Indian Falls, N. Y.
De Freest, D., East Greenwich, N. Y.
Delamater, John A. E., Meredith, N. Y.
Deming, Herbert, Cornish Center, N. H.
Denham, J. M., Valley, Ky.
Denison, H. W., Edmeston, N. Y.
Dennis, Dulany, Whitely, Pa.
Deroche, Julius, Castleton Corners, Staten Island, N. Y.
De Roche, Mrs. R. M., Port Richmond, Staten Island, N. Y.
Detrick, Byron, Ransom, Mich.
Detwiler, J. Y., New Smyrna, Fla.
Dewey, A., Marshfield, Pa.
Dewitt, G. S., Homowack, N. Y.
Dews, Wm. H., Chesterfield, Ill. Deals in sections.
Deyoe, Chris., Dodgeville, Iowa.
Dickerson, A. C., Bowling Green, Ky.
Dickerson, T. B., Hiawatha, Kans.
Dicks, Matthew, Unadilla, La.
Dickson, P. O., Harvard, Mass.
Dierdorff, Mrs. John D., Yale, Iowa.
Dilley, Ira, Mineral Point, Ohio.
Dines, Oscar, Fulton, N. Y.
Dings, Lyman, Hunters Land, N. Y.
Dockray, Clarence, Edgerton, Mich.
Dodge, B. G., Lancaster, Pa.
Dodge, Henry, Washington Mills, N. Y.
Dodge, O. A., Durham, Maine.
Donaldson, Parker, New Richmond, Ohio.
Donaway, G. J., Lansingburgh, N. Y.
Doolittle, M. A., Bethlehem, Conn.
Dooly, Rev. John, 399 Broome St., New York City.
Dopp, John T., Petersburgh, Pa.

Doss, S. C., Danville, Texas.
Dow, Chas. E., 30 School St., Lawrence, Mass.
Dowler, P. C., New Paris, Ohio.
Dowling, W. E., Drovers' Home, Pa.
Downs, E. B., Downs' Chapel, Del.
Drane, E., & Son, Eminence, Ky. Farmers.
Drecher, E. C., Saxonburg, Pa.
Drinkwater, Robert, Grand Haven, Mich.
Drumel, E. V., Bellefonte, Pa.
Drummond, C. H., Winslow, Maine.
Duke, P. W., Nettleborough, Ala.
Dummer, J. N., Rowley, Mass.
Dunbar, Joseph, Mount Sterling, Ill.
Dungan, Wm. J., Box 64, Pine Meadow, Conn.
Dunlap, I. B., Rochester, Ind.
Durell, Rev. G. W., Somerville, Mass.
Durham, Henry, Sylvania, Ind.
Dutcher, Miss Grace M., Hopedale, Mass.
Dutton, James A., East Knox, Maine.
Duvall, Chas. D., Spencerville, Md. General supplies.
Dyer, E. F., So. Braintree, Mass.
Dykeman, E. P., Stamford, N. Y.
Dykes, James, Fish Creek, Ont., Can.
Dyson, F., Dempseytown, Pa.

Eager, Dr. C., Sharon Centre, Iowa.
Eakin, Dr. C. L., Wardstown, W. Va. Beekeepers' supplies, mutton and wool, merino sheep.
Eastabrook, Austin, Grafton, Mass.
Eastman, J. H., Quechee, Vt.
Easton, J. E., Granby, Mass.
Easton, Thomas, Haddonfield, N. J.
Eaton, A. J., Worcester, Mass.
Eaton, E. F., Labette, Kans.

Eaton, Frank A., Bluffton, Ohio. Beekeepers' supplies.
Eaton, N. L., Ashburnham, Mass.
Eaton, Vernon, Mason, N. H.
Eberling, J. G. B., Galveston, Texas.
Eberly, J. W., Strasburg, Va.
Eckhoff, C. L., Standsted, Quebec.
Edmands, S. M., No. Brookfield, Mass.
Edmunds, Albert, Northwood Narrows, N. H.
Edsall, James N., Unadilla, Neb.
Edson, A. S., Martinsville, Mo.
Edwards, — Chester, N. H.
Edwards, Jas., Amprior, Ont., Ca.
Egleson, John, East Branch, Pa.
Ehlers, C. H., Pleasant Valley, Iowa.
Eiffert, Jacob, Milan, Pa.
Eldridge, Chas. L., New Bedford, Mass. Dealer in supplies.
Elliott, G. W., Keene, N. H.
Ellis, D. W., East Portland, Oregon.
Ellis, J. H., Dixfield, Maine.
Ellison, Wm. J., Statesburg, S. C. Clerk. Deals in quēens hives, etc.
Ellithrope, J. S., Canajoharie, N. Y.
Ellwood, P. H., Starkville, N. Y.
Elswort, Noblem Mt., Salem, Ont., Ca.
Ely, W. H., Allegan, Mich.
Emerick, W., Sumner, Ill.
Emerson, L. M., East Providence, R. I.
Emery, A. T., Boston, Mass.
Emery, F. M., Troy, Vt.
Emery, J. G., So. Franklin, Vt.
Ergenbright, Benj. J., Round Grove, Ind.
Ergenbright, Jacob A., Hopkins, Mo.
Erway, Mrs. Parker, Hastings, Mich.
Erwin, Jas., Christiansburg, Ky.

Erwin, F. M., Newhall, Los Angeles Co., Cal.
Esch, J. F., Keeseville, N. Y.
Estey, S. B., North Dana, Mass.
Evans, Henry S., Romeo, Mich.
Evans, Herbert T., Townsend, Vt.
Evans, Thos. B., Emmons, Kans.
Everest, M. A., West Addison, Vt.
Everts, Rev. Charles, Gould, Ohio.
Ewbank, M. V., Wheatland, Ind.
Ewing, Wm., East Hampton, Mass.
Ewing, Wm. L., Vincennes, Ind.

Fairman, F. E., 161 E. 36 St., New York, N. Y.
Fairbanks, A. L. I., Larrabee St., Lynn, Mass.
Falconer, J., Ligonier, Ind. Grower of small fruits.
Falwell, E. J., Pawnee Station, Kans.
Fargo, Fred H., Batavia, N. Y. Bees and poultry.
Farnum, R., Sand Lake, Mich.
Faucett, H. P., Dilworthtown, Pa.
Fauke, Chas., Union, Maine.
Fay, O. N., Portland, N. Y.
Feak, Nicholas, Walton, N. Y.
Feast, Wm., Baltimore, Md.
Feathers. Harvey, Royalton, Wis.
Fellows, Mrs. Mary, Youngstown, Ohio.
Ferguson, Isaac, Winsted, Conn.
Ferree, Locke L., Milroy, Ind. Farmer, deals in supplies.
Ficker, Franklin, Blackleysville, Ohio.
Field, Thos., Chatham, Ont., Can.
Fillilove, J. H., Verona, Ky.
Fine, John D., Vincennes, Ind.
Fioeher, Hugo, 235 8th street, Oshkosh, Wis.
Firman, A. M., Quasqueton, Iowa. Tested queens only.
Fisch, J. G., Muscatine, Iowa.

Fish, W. G., Ithaca, N. Y.
Fishback, J. S., Marshall, Ill.
Fisher, E. N., Ludlow, Mass. Beekeepers' supplies.
Flanagan, E. T., Bellville, Ill.
Fleming, M. J., Box 182, Hillsdale, Mich.
Fletcher, A. P., Ludlow, Vt.
Fletcher, Lester N., So. Acton, Mass.
Flickinger, A., Winthrop, Iowa.
Flint, D. D., Dexter, Maine.
Flister, E., 161 Fayette st., Boston, Mass.
Flood, Mrs. James, Grand Rapids, Mich.
Flood, Jennie, Packard St., Grand Rapids, Mich.
Flory, J. F., Lemoore, Cal. Deals in foundation.
Flory, C. P., Eaton, Ohio.
Floyd, C. Frank, Waterville, N. Y.
Flynn, Thos. D., Gaylordsville, Conn.
Fogt, John, Box 267, Ord, Nebraska.
Forbes, S., Waldo, Forestville, Conn.
Ford, Geo. J., Carlton Station, N. Y.
Ford, Wm., Dover, N. H.
Farncrook, G. & Co., Watertown, Wis. One-piece sections.
Fosdict, M., Williams, Mich.
Foss, C. H., Box 30, Tilton, N. H.
Foster, A. J., Winthrop, Iowa.
Foster, I., Daretown, New Jersey.
Foster, Mrs. Isaac, Barry, Ill.
Foster, Oliver, Mt. Vernon, Iowa.
Fowler, Edward, Lapeer City, Mich.
Fowler, Jas., Spartansburg, S. C.
Fox, Albert, Weston, Mich.
Fox, R. J., Natick, Mass.
Fozard, Jos., Marion, Ills.
Frame, H. G., No. Manchester, Ind. Bees and queens.
Francis, E. N., Uvalde, Texas.

Francis, L., Spring Hill, Texas.
Francis, Paul, Mulberry, Mo.
Fraser, J. R., Moncton, N. B., Can.
Frazier, Isaac, Little Rest, N. Y.
Frazier, I., Chestnut Ridge, N. Y.
Frazier, I., Millbrook, N. Y. Hives, frames, smokers, etc.
Frederickson, Lass., Cobden, Minn.
Fredericks, P. A., Tonawanda, N. Y.
Freeborn, S. I., Ithaca, Wis.
Freeman, Mrs. L. A., Lancaster, N. H.
French, F. H.. Dresden, Texas.
French, James F., Canterbury, N. H.
French, V., Skokomish, Wash. Ter.
Frey, Gottlieb, Richland Centre, Pa.
Frost, Mrs. O. P., Dows, Wright Co., Iowa.
Fry, E. V., Earlham, Iowa.
Fuller, Chas., Unadilla, N. Y.
Fuller, S. T., Kennebunk, Maine.
Fuller, Silas, Makeport, Mich.
Funk, Wm. D., Sterling, Utah.
Furman, W. A., Ithaca, Mich.

Gage, J. C., Hammonton, N. J.
Gallup, Luther, Sterling, Conn.
Gale, C. W., Jefferson, N. H.
Gale, George, Howell, Mich.
Gallager, Louis, Farmington, Conn.
Gambell, F. E., Leicester, Vt.
Gantt, D. T., Steel City, Neb.
Gapp, Wm., Richford, Vt.
Gardner, Edson, Cazenovia, N. Y. Miller.
Gardner, John, Mt. Gilead, Ohio.
Gardner, K., Hoosick, N. Y.
Garis, S. H., Newark, N. J.

Garluth, A., Beachmont, Mass.
Garrett, H. W., Coeymans Hollow, N. Y.
Garrison, Jno., East Greenbush, N. Y.
Gartside, J. M., 20th ward, Heville St., Pittsburg, Pa.
Gates, S. C., Norwich, Conn.
Gay, Miss M. E., No. Charleston, N. H.
Gaylord, R. S., Hadley, Mass.
Gedge, Thomas, La Salle, Ill. Hives, sections, bees and queens.
Gee, Chas. A., Abbotts, N. Y.
Geldard, James, Berkley Mill, Ashton, R. I.
Genthner, D. E., Dover, Me.
George, F. W., Williamstown, Iowa.
George, Julius, Mendon, Mass.
Gerald, I. S , Bird Island, Minn. Pharmacist. Deals in hives and frames.
Gere, C., East Springfield, Pa. Fruit grower.
Gerhart, A. Paul, Telford, Pa.
Germarm, Louis W., Millington, N. J.
Gerrish, Chas. V., Rochester, N. H.
Gibbens, F. H., Fostoria, Ohio.
Gibbs, Wm. H., Clinton, Mass.
Gielham, T. P., Lincoln, Texas.
Gilbert, Chas., Middleton, Conn.
Gilbert, Wm., Barre, Mass.
Gilchrist, S. B., Goffstown, N. H.
Giles, Alfred, Comford, Texas.
Giles, J. Edward, M. D., 127 East 16th street, N. Y. City.
Gill, A. C., New California, Ohio.
Gillett, I. W., Batavia, N. Y.
Gillett, J. P., Marshall, Mich.
Gillinghan, W. E., Gillinghan, Wis.
Gilman, Hiram, Lake Village, N. H.
Gilmiore, J. P. R., Long Plain, Mass.
Glacier, C. A., Charlton Depot, Mass.

Gladding, Lewis, New Boston, Mass.
Glazier, Z., Gouldsville, Vt.
Glenn, J. M., Morristown, Tenn.
Glore, Wm., Milan, Mo.
Goble, Mrs. M. E., Pemberton, N. J.
Goddard, J. A., Grafton, Mass.
Godwin, J. G., Derry, N. H.
Goldinger, D. S., Tarentum, Pa.
Goodale, J. R., M. D., Pawtucket, R. I.
Goodell, C. H., Royalston, Mass.
Goodell, Roswell, Ann Arbor, Mich.
Goodrich, Francis, Crown Point, N. Y.
Goodrich, John, Fitchburg, Mass.
Goodrich, W. B., Union City, Pa.
Goodspeed, C. M., Thorn Hill, N. Y.
Goodwin, A. J., M. D., New Smyrna, Fla.
Goodwin, G. R., Diamond, Pa.
Goold, Allen C., Chester, Vt.
Gorden, A. W., Abilene, Kansas.
Gorden, Mrs. M. H., Whitefield, N. H.
Gorrell, M. L., Hebron, W. Va.
Gould, A. C., Providence, R. I.
Gould, J. J., Ipswich, Mass.
Gould, Wm. E., Fremont, Mich. Bees, queens, Barnes' saws and bee-hives.
Graffis, Abraham, Bremen, Ohio. Farmer.
Gragg, Wm. F., Box 295, West Quincy, Mass.
Graham, S. G., Whitinsville, Mass.
Graham, W. R., Greenville, Texas. Dealer in beekeepers' supplies.
Grant, Alexander, Springville, Pictou Co., Nova Scotia.
Grant, J. G., No. Scituate, Mass.
Grant, W. W., Marion, Ill.
Grass, A. S., East Portland, Oregon.

Grasser, G. H., Crete, Neb.
Graves, C. A., Whately, Mass.
Graves, D. E., Warren, Mass.
Graves, E. B., Welcome, Minn.
Graves, F. C., Hartford, Conn.
Graves, L. B., Nineveh, Ind.
Gray, John G., St. Catherines, Ont., Ca.
Gray, Luther, Orlando, Fla.
Gray, L. J., Merrimac, Mass.
Greely, E., Lorain, Ohio.
Green, Chas. A., Gorham, Maine.
Green, Charles E., Dryden, N. Y. Merchant tailor.
Green, Geo. C., Providence, R. I.
Green, J. A., Dayton, Ill.
Green, J. C., Diamond, Pa.
Green, J. V., Naskaynna, N. Y.
Green, R. F., 121 Spring St., New York, N. Y.
Green, Seth, No. Greenwich, N. Y.
Greenleaf, J. C., New Boston, Mass.
Gregg, Josiah, Visalia, Cal.
Gregory, H. L., Atlay, N. Y.
Gregory, J. B., Garrattsville, N. Y.
Greiger, J., North Danville, N. Y.
Gresh, Abel, Weedville, Pa.
Gresh, Henry, Ridgeway, Pa.
Greutzner, Edward, New Dundee, Ont., Can.
Griffin, C. F., Stamford, Conn.
Griffin, Wm., Mamaroneck, N. Y.
Griffith, J. H., Beaver Lick, Ky.
Griffith, Peter C., Pittston, Pa.
Greengo, A. L., Colgate, Wis.
Grim, Wm. W., Pekin, Ind.
Grisworld, Fred., Lebanon, N. H.

Groff, Geo. G., Lewisburg, Pa.
Grumm, Christopher, Jefferson, Wis.
Gumberger, Jno., Neillsville, Wis.
Gumbett, M.; Ohl, Jefferson Co., Pa.
Guptill, Hollis, Berwick, Maine.
Guy, E. E., Yardly, Pa.
Guyware, John P., Taunton, Mass.
Gwynn, Joseph, Jefferson, Pa.
Gzett, J. A., 1163 Walton St., Denver, Colo.

Haas, Frank, Piedmont, Kans.
Hackett, H. P., Rives, Richland Co., Ohio.
Haeger, John F., Hill City, Tenn.
Haigh, David, Alma, Wis.
Haines, J. C., Mohawk, N. Y.
Hake, Geo., Goshen, Ind.
Hall, F. D. F., Fredonia, N. Y.
Hall, Geo. J., Rumney, N. H.
Hall, G. M., Calhoun, Ga.
Halladay, E., Suffield, Conn.
Hallock, H. T., San Jacinto, Cal.
Hamden, L. P., East Fryburg, Maine.
Hamilton, Geo., Plank Road, N. Y.
Hamilton, J. L., Adamsville, Tenn.
Hamilton, P. H., Paris, Ont., Can.
Hamilton, Robt. G., Milford, Pa.
Hamilton, Wm., 223 Main St., Louisville, Ky.
Hamley, John C., 104 Oxford St., Lynn, Mass.
Hamlin, P. M., Pittston, Pa.
Hamlin, W. F.. Decatur, Mich.
Hammond, Geo. T., Brockport, N. Y.
Hancock, Geo. B., Roslindale, Mass.
Hancock, Jos., Jenkintown, Pa.

Hanford, W., Etna, Tompkins Co., N. Y.
Hanner, J. K. P., Calvert, Texas.
Hanks, Arthur R., Charles River Village, Mass.
Hansford, O.T., Mount Clare, W. Va. Dealer in hives, sections and smokers.
Harger, E. B., Oxford, Conn.
Harker Brothers, Homerstown, N. J.
Harmon & Skinner, Zenos, Arizona. Dealers in beekeepers' supplies.
Harper, John H., Phillipsburg, Pa.
Harrington, H. S., Walden, Vt.
Harris, D. G., Prairie du Chien, Wis.
Harris, D. P., Clinton, Ills.
Harris, E. W., Wilmare, Ky.
Harris, Jas., Ortonville, Iowa.
Harris, Wm. C., East Toledo, Ohio.
Harrison, J. H., Wayback, Texas.
Hart, W. S., Hawks Park, Fla.
Hartman, J. W., Florence, W. Va.
Hartwell, Jas. C., Lake Creek, Ill.
Hartwick, Isaac, Lorain, Ind.
Harvey, James, Brooks, Ia. Hives and sections.
Harvey, J. C., Jessup Station, Maryland.
Haskin, A. S., Lawrence, Mich.
Haskin, S. D., Waterville, Minn.
Haskin, S. J., Waterville, Minn.
Haskins, J. W., Bronson, Mich.
Haslett, P. N., Guyville, Pa.
Hassen, Jas. G., Ebensburg, Pa.
Hastings, Horace, Willapa, Wash. Ter.
Hastings, S. R., Harshmon, Ohio.
Hatch, F. W., Reading, Mass.
Hatch, G. W., Ischua, N. Y.
Hatfield, A. J., South Bend, Ind.

Hathaway, A. W., High Hill, Mo.
Hathaway, L. W., So. Hanover, Mass.
Haupt, Isaac, Bellfonte, Pa.
Havens, Francis D., Box 455, Santa Barbara. California apiarian.
Hawk, Z. T., Audubon, Iowa.
Hawkins, John H., Mt. Etna, Ind.
Hawkins, Wm. D., Oneonta, N. Y.
Haworth, Justin L., Georgetown, Ill.
Hayen, Wm. G., Pleasant Mound, Ill. Blacksmith. Dealer in bees and bee-hives.
Hayes, Jas., Adel, Iowa.
Hays, Geo. H., Taylor, Texas.
Hays, John R., Payup, Ga.
Hays, L., Red Bank, N. J.
Hayward & Stratton, East Pepperell, Mass.
Heacock, S. P., Chillicothe, Iowa.
Heath, Andrew, So. Norwalk, Conn.
Hecht, H. A., Chillicothe, Ohio.
Heckensmith, S. B., Switzer, Ky.
Heddon, James, Dowagiac, Mich. Publisher and dealer in hives, bees, queens, etc.
Heim, Alwin L., Chandler, Ind.
Heiney, Daniel, Andrews, Ind.
Heivly, A. J., Lebe, Kans.
Heivly, Wm. O., Raymore, Mo. Deals in supplies.
Helsel, Zolius, Edgarton, Mich.
Henderson, J. J., Rosston, Cook Co., Texas.
Hengst, Elias, Loganville, Pa.
Heni, Fred, Morrill, Kans.
Henley, L., Mt. Carroll, Ill.
Henry, G. A., So. Acton, Me.
Henry, Lafayette, Waldon, Mich.
Henry, Thos., Bradyville, Iowa.
Heott, Andrew, So. Norwalk, Conn.

Herbert, John, Reese, Mich.

Herbert, T. J., Iredel, Texas. Physician.

Heron, I. S., Marshfield, Ohio.

Herring, Charles M., Brunswick, Maine. Hives and foundation.

Hershiser, O. L., Water Valley, N. Y.

Hervey, Joel, Blackstone, Mass.

Hesmer, John, 616 Main St., Evansville, Ind. Cooperwright.

Hess, Louis, Cobleskill, N. Y.

Hess, Wm., Conway, Ark.

Hetherington, Capt. J. E., Cherry Valley, N. Y.

Heyward, Wm., Stafford, N. Y.

Hickox, W., Rockport, Ohio.

Hicks, J. M., Battle Ground, Ind.

Higginbotham, S. T. B., Grantland P. O., Va.

Hill, Amos S., Lime Works, Ky.

Hill, Henry C., Bethlehem, Conn. Foundation.

Hill, I. S., Mt. Healthy, Ohio.

Hill, Lloyd, Titusville, Pa.

Hill, M. S., Lompoc, Cal.

Hill, V. F., St. Francisville, Mo.

Hill, Wm., Prophetstown, Ill.

Hiller, J. H., Ogden, Ill.

Hillman, W. J., Green River, Vt.

Hills, Mrs. H., Sheboygan Falls, Wis.

Hilton, Geo. E., Fremont, Mich. Beekeepers' supplies.

Hine, Alvin L., Chandler, Ind.

Hine, Wm., Bethlehem, Conn.

Hitchcock, E., Kendall Creek, Mo.

Hitchcock, J. C., Waterbury, Vt.

Hitchcock, Selden B., Westfield, Vt.

Hixon, Levi, Glen Oak, Ont., Ca.

Hobson, Jno. F., Winchester, Va.

Hoffman, C. L., Petersburg, Pa.

Hoffman, Chas., Beach Ridge, N. Y.
Holbrook, R. B., Mt. Clare, W. Va.
Holcomb, Amasa, Southwick, Mass.
Holden, A. C., Foxboro, Mass.
Holden, Henry, Langdon, N. H.
Hollenback, G. L., Box 59, Noblesville, Ind.
Holley, Edward, West Farmington, Maine.
Holloway, D. R., Parsonburg, Md.
Holloway, Wm. L., Ainger, Ohio.
Holly, Chas. E., West Farmington, Maine.
Holmes, M. E., Dorchester, Neb.
Holmes, R. H., Shoreham, Vt.
Holmes, Wm., Athens, N. Y.
Holt, B. H., Adel, Iowa.
Holt, J. H., Southington, Conn.
Holterman, R. T., Brantford, Ont., Ca.
Holtmann, J. F. W., Redbud, Ill.
Hoover, George, Canal Fulton, Ohio.
Hoover, Oliver, Snyderstown, Pa. Beekeepers' supplies.
Hopkins, Adah L., East Charleston, Vt.
Hopkins, Richard, Bear Grove, Iowa.
Hopkins, Samuel T., Conway, Mass. Foundation, hives, and smokers.
Hopkins, Stephen, West Walworth, N. Y.
Horner, Joseph H., Angelica, N. Y.
Horst, David H., North Lawrence, Ohio.
Horton, Wm., A., Macy, Ind.
Houghton, Chas. A., West Medway, Mass.
Houghton, F. J., W. Westminister, Vt.
Houghton, Frank A., Harvard, Mass. Sections and foundation.
Hoult, Francis, Milton, Oregon.
House, A. B., Council Bluffs, Iowa.
House, Geo. W., Manlius, N. Y.
House, Oscar, Edgarton, Mich.

Housel, Wm. E., Croton, N. J.
Howard, C. H., Raritan, N. Y.
Howard, Ezra E., Edgar, Neb.
Howard, Geo. P., Marion, N. Y.
Howard, Geo W., Delta, Colo.
Howard, J. W., Windham, N. Y.
Howard, Lorenzo D., East Sangerfield, Maine.
Howard, Ogle, Paloma, Ill.
Howe, D. L., Woodstock, Vt.
Howe, Geo. D., North Hadley, Mass.
Howe, John H., Mansfield, Mass. Sells bees.
Howell, A. W., W. Lawrence Station, N. J.
Howell, J., Kenton, Tenn.
Howell, John W., Kenton, Tenn.
Howerton, J. S., Guntown, Miss.
Howie, John R., Northfield, Maine.
Howie, Samuel, Lyons Falls, N. Y.
Howland, H. C., Oxford, N. Y.
Howland, Levi C., Beaufort, N. C.
Hoyt, G. H., Otisco Center, N. Y.
Hoyt, Jason R. C., Webster, N. H.
Hoyt, William, Ripley, Me. Beekeepers' supplies.
Hubbard, John, Walpole, N. H.
Hubbard, T. J., Iredell, Texas.
Hubbard, W. B., Royalston, Mass.
Hubbard, Wm., Pleasant Gap, Mo.
Hudgens, I. S., Newburg, Mo.
Hudgens, M. D., 625 Second St., Davenport, Iowa.
Hudgens, T. W., Silver Creek, Ky.
Huffer, I. N., Shelbyville, Ill.
Hulett, Edson, Pawlet, Rutland Co., Vt.
Hullman, L. R., Winfred, Lake Co., Dak.
Humphrey, Samuel, Henning, Ill.
Hunnewell, Alonzo A., New Gloucester, Maine.

Hunt, Aaron, Gordon, Ohio. Farmer. General supplies for the apiary.
Hunt, John, Plain City, Ohio. Clergyman and school teacher.
Hunter, John H., Perryville, Ohio.
Huntington, W., Wilton, Conn.
Hurd, George A., So. Acton, Maine.
Huse, Mrs. T. P., Methuen, Mass.
Hutchins, F. C., Massena, N. Y.
Hutchins, Isaac, Wellington, Maine.
Hutchinson, Wm., Down's Chapel, Del.
Hutchinson, W. Z., Flint, Mich. Editor and proprietor of Beekeepers' Review (Monthly) 50 cts. per annum.
Hyde, A. P., Oxford, N. Y.
Hyde, L. C., Brightwood, Mass.
Hyne, J. M., Stewartsville, Ind.
Hyne, Jas. F., Stewartsville, Ind.

Jackson, Geo., Madison, N. H.
Jackson, Jesse, Ossipee Valley, N. H.
Jackson, Jonathan, Moultonville, N. H.
Jacobs, A. A., Jamestown, N. Y.
Jacobs, Mary, Kendallville, Ind.
Jacobs, W. B., Temperanceville, Va.
Jacocks, J. J., Windsor, N. C.
Jaggers, Chas. D., Vorden, Pa.
James, Theodore, 10 Montgomery St., No. Adams, Mass.
Janeway, J. L., 102 Chelton Ave., Germantown, Phil'a, Pa.
Jarmon, Wm. E., Elgin, Texas.
Jarret, J. R., Falls Village, Vt.
Jeffrey, H. L., New Preston, Conn. Deals in queens.
Jeffrey, Russell, Bloutsville, Ind.
Jenkins, J. W., Townsend, Vt.
Jenness, S. A., Haverhill, Mass.
Jennings, Aaron, Medusa, N. Y.

Jennings, Theodore, Box 69, Portchester, N. Y. Deals in queens, hives, sections, etc.

Jewett, F. E., East Rindge, N. H.

Jewett, Geo. F., Apalachin, N. Y.

Johnson, A. B., Clarkton, N. C.

Johnson, A. D., Saugus, Mass.

Johnson, B. R., Box 95, Bois d'Arc, Mo.

Johnson, C. S., West Brookfield, Mass.

Johnson, Chas., Box 43, Latimer, Iowa.

Johnson, D. H., Danielsonville, Conn.

Johnson, F. B. Litchfield, Conn.

Johnson, F. L., Cottage, N. Y.

Johnson, Francis N., Knoxville, Ill.

Johnson, G. W., Holden, Mo.

Johnson, Gustavus, Laytonville, Cal.

Johnson, Jas. T., Salem, Mo.

Johnson, Lafayette, Walton, Ky.

Johnson, L. E., Lady Lake, Fla.

Johnson, T. L., Vernon, Vt.

Johnson, Walter F., Fairmount, Ark.

Johnson, W. K., Oxford, Mass.

Johnson, W. T., Cincinnati, Ohio.

Johnston, C. A., Somerset, Ky.

Jones, A. R., Charlton City, Mass.

Jones, F. B., Howard, Minn.

Jones, Geo. W., West Bend, Wis.

Jones, J. H., Roxborough, Philadelphia, Pa.

Jones, Lewis, Dexter, Ont., Can.

Jones, R. E., Uvalde, Texas.

Jones, Richard, Copenhagen, Ont., Can.

Jones, Wm. W., Hubbardton, Vt. Blacksmith and wheelwright. Deals in queens.

Jordan, H. A., Allston St., Brighton, Mass. Real estate agent.

Jordan, J. M., West Bowersville, Ga.

Jordan, P. D., Ava, Ohio.
Jordan, W. B., Waltham, Maine.
Jordon, F. E., Camp Veade, Arizona.
Joslyn, Fred. A., Fitchburg, Mass.
Josyln, Mrs. Mary, West Winfield, N. Y.
Joslyn, Sarah E., 56 York St., Cincinnati, Ohio.
Judson, Ben, Salt Lake City, Utah.
Judson, Geo. A., Swampscott, Mass.
Judson, Lester, East Sidney, N. Y.
June, I. M., River Bank, Conn.

Kauffman, Daniel, Needy, Oregon. Beekeepers' supplies.
Keating, Edward, Elkhorn Station, Neb.
Keegan, Thos. P., Sleepy Eye, Minn.
Keigley, Geo., Waynesburg, Pa.
Keihl, C. H., Dayton, Ohio.
Keller, Henry, Rolla, Mo.
Kelley, J. M., 220 Church St., Norfolk, Va.
Kellogg, L. G., Ripon, Wis.
Kelly, M. A., Milton, W. Va.
Kelson, C. W., Antrim, N. H.
Kemp, W. L., Farmington, Pa.
Kemper, J. H., Southport, Indiana.
Kendall, A. C., Cleveland, Ohio.
Kendall, C. E., Short Falls, N. H.
Kendall, H. P., Sterling, Mass.
Kendall, W. B., Uvalde, Texas.
Kendrick, J. R., Manchester, N. H.
Kenenon, W. P., Barre, Vt.
Kenenon, W. S., Peacham, Vt.
Kennard, H. J., L. Box 25, Epping, N. H.
Kennedy, A. B., Atlanta, Kans.
Kennedy, Ira, Newcumberland, Ohio.
Kennedy, Robt., Bethany, Ont., Ca.

Kenyon, Thos., Box 507, Hamilton, Ohio.
Kepner, E. H., Dunlap, Tenn.
Kern, J. J., Friedenson, Maryland.
Kerr, John, Greensburg, Pa. Deals in queens.
Kershner, G. W., Spanker, Ohio.
Kienle, Fred., East Hampton, Mass.
Killberg, P. A., Sealy, Texas.
Kimball, Frank, Cochituate, Mass.
Kimball, Wm., Dewitt, Iowa.
Kimbally, W. F., Natick, Mass.
King, Geo. W., 1692 31st St. W., Washington, D. C.
King, J. J., Brady's Bend, Pa.
Kingsbury, Geo. W., Clifton Springs, N. Y.
Kinne, H. N., Greenville, Conn.
Kinney, G. W., Gaza, N. H.
Kinney, H. H., Renfrew, Pa. Oil producer.
Kinney, Warren C., Campello, Mass. Market gardener.
Kinsman, J. H., Somerville, Mass.
Kinzie & Co., J. M., Rochester, Mich. Hives, frames and foundation.
Kipton, James S., Williams Bridge, N. Y.
Kirby, Edw. P., Somerville, Mass.
Kirkley, Capt. Dennis, Toolsburg, Iowa.
Kline, W. E., Evans City, Pa.
Klock, Joseph, Urban, Pa. Clock and watchmaker.
Klutts, S. L., Clean Creek, N. C.
Knaper, N. D., Upper Jay, N. Y.
Knapp, Dummerston, Vt.
Knapp, H. H., Danbury, Conn.
Knapp, N. A., Rochester, Ohio.
Knight, J. R., Primus, S. C.
Knight, W. E., Gardner, Mass.
Knight, W. E., Primus, S. C.
Knight, Ross, Westfield, New York.
Knight, Walter, East Greenwich, R. I.

Knight & Pray, Littleton, Colorado.
Knowles, E. C., Seaton, Oregon.
Knowles, Harry, Auburn, R. I.
Knowles, Nath., Ferrisburg, Vt.
Knowles, Wm., Carholm, Ont., Can.
Knowlton, Susan C., Berne, Minn.
Knox, H. E., West Ossipee, N. H.
Kock & Dimity, Morgan City, La.
Koitham, Alvin, Shawnee, N. Y.
Koons, D., East Boston, N. Y.
Kopetzky, Joseph, Crete, Neb.
Kratz, Wm. D., Hatfield, Pa.
Kretchmer, E. Coburg, Iowa. Beekeepers' supplies.
Kromer, C., Eden Center, N. Y.
Kropp, J. C., Millville, Cal.
Kyle, H. H., Beech City, Ohio.

Lacke, George, M. D., Newburgh, Ind.
Lacy, H. W., Mansfield, Mass. Lacy smoker, foundation, queens and bees.
Ladd, L. A., Summerville, Vt.
Lake Brothers, Catonville, Maryland.
Lake, Charles H., Marion, N. Y. Farmer and fruit grower.
Lake, John T., Troy, Bell Co., Texas.
Lake, S. R., White Creek, N. Y.
Lakin, S. W., M. D., Eureka, Ill.
Lamaster, L. C., Honey Grove, Texas.
Lamb, D. W., Clare, Mich.
Lamb, F. M., Leicester, Mass.
Lamb, H., Jeddo, Mich.
Lamberlin, Ed., Parkville, Mo.
Lambert, E. H., Iredell, Texas.
Lamkin, Ward, Goodyears, N. S.
Lane, C. F., Lexington, Mo.

Lane, G. E., Pinckney, N. Y.
Lane, W. A., So. Barre, Vt.
Lang, E., Birmingham, Conn.
Lang, Geo. W., Bismark, Ill.
Langdon, H. P., East Constable, N. Y. Beekeepers' supplies.
Larmer, E. J. F., Osceola, Va.
Larrabee, John H., Larrabee's Point, Vt.
Lathrop, S. F., Chase Lake, Mich.
Latimer, Wm. R., Bloomsfield, Conn.
Lattin, Lout, Statesburg, N. Y.
Lawford, T. W., Trenton Mills, Va.
Lawing, S. S., Henderson, Mo.
Lawrence, E., Gaines Station, Mich.
Lawrenec, —, 723½ 10th St., Washington, D. C.
Lawrence, Loren, Wayland, Pa.
Leach, A. L., Dwighty, Ill.
Leahy, H. B., Higginsville, Mo. General supplies.
Leahy, R. H., Higginsville, Mo.
Learie, J. R., Richfield Springs, N. Y.
Learned, A. K., So. Gardner, Mass.
Lee, Y. G., Charlotte Harbor, Fla.
Leeder, Wm. A., Dykes, Mo.
Leete, P. W., Sylvan Beach, N. Y. Civil engineer.
Lefavor, W. J., Pottsdam, N. Y.
Lefever, John, jr., York, Pa.
Leigh, E. C., Beatrice, Neb.
Leighton, A. W., Ascutneyville, Vt.
Leighton, E. B., Falmouth, Maine.
Leland, E. F., 495 Columbus Ave., Boston, Mass.
Leonard, Chas. R., Royal Oak, Md.
Leonard, G. W., Middle Valley, Pa.
Leonard, Mrs. H. C., Pigeon Cove, Mass.
Leonard, Sam'l, Fairhaven, Mass.

Leonard, S. R., 31 Lemon St., Newark, N. J.
Leonier, David G., Haddonfield, N. J.
Lewis, A. A., Waterbury, Vt.
Lewis, Chas. H., Middleton, Conn.
Lewis, Edwin, Harrietsville, Ont., Can.
Lewis, Geo., Monticello, Wis.
Lewis, Henry, Farmington, Conn.
Lewis, Jacob F., Dennis, Kansas. Hives of his own design.
Lewis, N. B., Pine Hill, R. I.
Lewis, W. F., Santa Anna, Texas.
Lighty, L. W., Mulberry, Pa.
Lighton, Frank W., Newbury, Pa.
Lillie, J. A., Box 200, Raton, New Mexico.
Lincoln, Fred L., Castleton, N. H.
Livermore, S. M., So. Londonderry, Vt.
Lloyd, W. E., Arlington Heights, Mass.
Lobdell, A. J., East Berne, N. Y.
Lockhart, Lake George, N. Y.
Logan, H. B., Clearfield, Pa.
Loker, S. R., Natick, Mass.
Lombard, E. P., Ashburnham, Mass.
Looft, C. G., Forest, Ohio.
Loomis, T., Crete, Neb.
Lorelis, W. A., Ozone, Ark.
Lormsburg, O., Meriden, Conn.
Lorriman, Wm., Pottsville, Pa.
Loudon, S. B., Woodlawn, N. C.
Louthian, L. W., Ranaleburgh, N. C.
Lovejoy, D. L., Martinsburg, N. Y.
Lowey, Robt., Woodrows, Ont., Can.
Lowrey, O. J., Jericho, Vt.
Lowrey, W. J., M. D., Harford, Pa.
Lucas, A. S., Barnes' Corners, N. Y.

Lucas, J. A., Goshen, Conn.
Lucas, P. H., Mt. Vernon, N. Y.
Ludden, Sarah, Milton Mills, N. Y.
Ludy, C. W., Myersville, Md.
Lund, E. W., Baldwinsville, Mass.
Lusby, John G., Bridgewater, Iowa.
Luttrell, B. G., Luttrell, Ala. Hives, foundation and queens.
Lyman, J. H., East Hampton, Mass.
Lynch, Chas. J., 625 Thames St., Newport, R. I.
Lynde, E. B., Westminster, Mass.
Lyon, C. S., 31 8th Ave., New York, N. Y.
Lyon, F. R., Stoughton, Wis.

Mace, T. B., Chillicothe, Ohio.
Mackey, D. C., Brimley, Ohio.
Mackey, L., Lafayette, Ind.
Macrae, J. A., Anthony, R. I.
Madlin, Sam'l, Moltke, Minn.
Magley, Wm. H., Coldwater, Mich.
Mahoney, D., Fort Plain, N. Y.
Major, John, Cokeville, Pa.
Maley, A. E., Auburn, Neb.
Malone, Wm., Malone, Iowa.
Manchester, Duane, West Hoosick, N. Y.
Manchester, F. E., New Boston, Mass.
Manley, D. B., Danbury, Conn.
Mann, H. W., Walpole, Mass.
Manning, John W., Salineville, Ohio.
Mansfield, C. E., Fitchburg, Mass.
Mansfield, J. D., Dubberly, La.
Maraghano, Miss R., New Rochelle, N. Y.
Marble, E. F., Grafton, Mass.
Marchant, Dr. J. M., Warren, R. I.

Markham, S. A., Ellington, N. Y.
Marks, W. F., Chapinville, N. Y.
Marple, J. P., Lancaster, Wis.
Marsh, C. A., Sharon, Vt.
Marsh, Rev. D. D., Uniontown, Conn.
Marsh, H. W., M. D., Tannehill, Kans.
Marsh, M. P., No. Amherst, Mass.
Marsh, Wm., McLane, Pa.
Marshall, A. L., Pittsfield, Mass.
Marshall, W. B., Indiana, Pa.
Marston, Thos., Great Falls, N. H.
Martin, Hudson, Ashland, Mo.
Martin, John, Sandy P. O., Oregon.
Martin, Wm., Cass City, Mich.
Mase, D. A., Mt. Hope, N. J. Deals in hives, frames, foundation, etc.
Mason, A., East Orland, Maine.
Mason, H. W., Prostonville, Vt.
Mason, Henry, Monroe, La.
Mason, L. I., Hartford, Conn.
Mason, Lot, Auburn, Ill.
Mason, Wm. B. Masonville, Quebec, Can.
Massie, T. K., Concord Church, W. Va.
Maston, C. C., Dover, N. H.
Mathews, C. H., Ridgeway, Ont., Can.
Matterson, A. J., Anthony, R. I.
Mayhew, S. L., Box 82, Falmouth, Mass.
Maynard, C. C., Harvard, Mass.
Maynard, L. M., Maynard, Mass.
McBrown, H., Seward, Pa.
McCarty, O., Zollarsville, Pa.
McCarty, Osman, Millsboro, Pa.
McClang, S. T., Niles, Mich.
McClees, J., Norwalk, Iowa.

McCord, D. A., Oxford, Ohio.
McCormic, M. L., Grant City, Pa.
McCormick, Wm. B., Uniontown, Pa.
McCoy, John, Sobetha, Kansas.
McCracken, W. A., Cuba, Mo.
McCredie, E. P., Mongo, Ind.
McCully, Cyrus, Hubbard, Ohio.
McDow, Robert, Ashland, Mo. Farmer and stock raiser.
McElrath, P. J. B., Centre, Ala.
McFarland, F. H., Charlotteville, Vt.
McGlen, Miss A. W., Georgetown, Mass.
McGwire, G. W., Dark Ridge, N. C.
McHam, Frank, Teanaway, Wash. Terr.
McKinney, H. H., Renfrew, Pa.
McLain, S. W., Aurora, Ill.
McLane, N. D., North Brookfield, Mass.
McLaughlin, H., No. Springfield, Mo.
McLaughlin, Wm., Harmony, Maine.
McLaughlin, Wm., Cedar Springs, Mich.
McLean, Rod, Hopewell, Nova Scotia.
McLean, Miss C. S., Red Bank, New Jersey.
McMurray, George N., Auburn, Cal.
McMurray, R. D., Dadeville, Mo.
McTavish, John, Box 81, Belmont, Ont., Can.
McWilliams, H. W., Griffin, Ga. Beekeeper's supplies.
Mead, A. F., Edwardsburg, Mich.
Meader, C. C., No. Auburn, Neb.
Meader, N. P., No. Auburn, Neb.
Meatyard, Robert, Ellicott, N. Y.
Meeker, Myron, Hawleytown, N. Y.
Meggenhopen, E., Chillicothe, Ohio.
Megown, John, Youngstown, Ohio. Brick and stone contractor.
Melendy, A. D., Nashua, N. H.

Melius, Wm. H., Claverack, N. Y.
Melkin, Myron, Hawleytown, N. Y.
Meloon, Chas. O., Portsmouth, N. H.
Melvin, J. B., So. Chelmsford, Mass.
Menderhall, J. C., Washington, Ind.
Mentzer, Wm., Harvard, Mass.
Mercer, L. E., San Buenaventura, Cal.
Merchant, Abel, Nassau, N. Y.
Merriam, F. E., Shirley, Mass. Dealer in whalebone.
Merrill, E. C., West Hartland, Conn.
Merrill, W. J., M. D., Hampton, N. H.
Messer, Joel, Bison, Tenn.
Metcalf, L. C., Reedsburg, Ohio.
Michael, Eugene, Lapeer, Mich. Fruit grower and bee-keeper.
Middlebrook, N. M., Patterson, Texas.
Miles, Geo. W., Teepleville, Pa. Deals in sections and foundation.
Miles, F. H., Derby Line, Vt.
Miles, William F., Lompoe, Cal.
Millard, H. F., Danby, Vt.
Millard, N. T., Princeton, Wis.
Millegan, E. K., Maine Avenue, N. J.
Miller, A. C., Box 16, Meriden, Conn.
Miller, A. C., Providence, R. I.
Miller, A. F., Camden, Maine.
Miller, C. C., Marengo, Ill.
Miller, H. E., No. Searsport, Maine.
Miller, H. K., Shoemakersville, Pa.
Miller, J. A., Middlesex, Pa.
Miller, J. J., Tunkhannock, Pa.
Miller, John, Lansingburg, N. Y.
Miller, P. D., Grapeville, Pa. Queen bee and poultry raiser.
Miller, W. N., DeKalb, N. Y.

Miller, W. S., Durham, Maine.
Mills, Alpheus, Georgetown, Mass.
Mills, F. H., Sarnia, Ont., Can.
Mills, Geo., Delhi, Ont., Can.
Miner, D. V., Brownsville, Neb.
Miner, Oscar, Linden, N. J.
Miner, O. F., Taylor Centre, N. Y.
Mitchell, Daniel, Millbrook, N. Y.
Mitchell, J. R., Taylorstown, Pa.
Moe, M. W., 130 Broadway, Denver, Colorado.
Moltz, T. M., West Fairview, Pa.
Monzingo, Mrs. F. M., Clarinda, Iowa.
Moody, S. E., 16 John St., Room 8, Lowell, Mass.
Moore, B. F., Brushey, S. C.
Moore, E. A., Reno, Nevada. Sells hives, sections and bees.
Moore, H. C., Pin Oak, Texas.
Moore, J. D., Sunnydale, Ont., Can.
Moore, L. P., Goffs Falls, N. H.
Morgan, Chas., Franklin, Vt.
Morgan, Miss Ella A., Deering, Maine.
Morgan, Fred C., New London, Conn.
Morgan, John, Belton, Texas. Farmer and cattle raiser.
Moriah Center Mill Co., Moriah Center, N. Y. Hives, sections, etc.
Morrill, A. A., Glenwood, Oregon.
Morse, Chas., Harvard, Mass.
Morse, E. H., So. Wareham, Mass.
Morse, Miss M. B., Milford, Mass.
Morse, Quincy, No. Hanover, Mass.
Morton, Hattie E., Newburyport, Mass.
Mory, J. J., Mrs., St. Henrys, Ohio.
Moshier, Miss I. E., Ridge Road, N. Y.
Mower, Simon, Upper Sandusky, Ohio.
Mowry, T. B., Oneco, Conn.

Moyer, J. L., Quakertown, Pa.
Moyer, H. M., Primrose, Ohio.
Moyer, H. M., Hill Church, Pa.
Muckland & Glouver, Fruitland, Fla.
Mudgett, E. S., Gilmanton, N. H.
Mullock, L. J., Watertown, Ont., Can.
Mundon, James, Arthur, Grant Co., Wis.
Munroe, J. M., Embro, Ont., Can.
Munyan, J. C., Northampton, Mass.
Murdoch, Albert, Union Grove, Wis.
Murphy, Hiram, Gosport, Ind.
Murray, J. B., Ada, Ohio. Deals in supplies of all kinds for the apiary.
Murray, J. D, Wattsburg, Pa.
Muth & Son, Chas., Cincinnati, Ohio. General supplies and dealer in honey.
Myers, F. A., Bismark, Ill.
Myers, Oscar S., M. D., Wickford, R. I.
Myers, Mark, Lakeside, Cal.
Myers, Rev. S., Timberville, Va.

Nangle, J. H., Danvers, Mass.
Nash, A. H., Santa Monica, Cal.
Nebel & Son, Jno., High Hill, Mo.
Needham, A. P., Vergennes, Vt.
Needles, J. P., Stanberry, Mo. Hives, sections and foundation.
Neil, Ham., Farmersville, Texas.
Neill, N., 5 Lawrence Hall, Cambridge, Mass.
Nelson, A. L., Ascutneyville, Vt.
Nelson, B. R., Bernardston, Mass.
Nelson, L., Lakewood, N. J.
Nelson, Seth, Wistar, Pa.
Nelson, W. H., Cove St., New Bedford, Mass.

Neville, R. M. D., Teegarden, Ind. Dealer in pure Holy Land queens.

Nevins, J. R., Schuylersville, N. Y.

Newcomb, E. R., Pleasant Valley, N. Y. Deals in everything used by beekeepers.

Newcomb, J. B., Litchfield, Conn.

Newell, E. C., Brookfield, N. H.

Newell, P. J., Willimantic, Mass.

Newlin, Aaron, Georgetown, Ill.

Newman, J. H., Charlevoix, Mich.

Newman & Son, Thos. G., 925 W. Madison St., Chicago, Ill. Publishers of the weekly American Bee Journal. Deal in supplies.

Newton, Wm. A., Northfield, Mass.

Nichols, A. P., West Springfield, N. H.

Nichols, J. J., Berlin, N. Y.

Nichols, J. R., Rochdale, Mass.

Nichols, W. L., Richmond, Mass.

Nicholson, Jr., Jos., Kuckville, N. Y.

Niles, M., Box 205, Merriton, Ont., Ca.

Nimetz, John, Ross Station, Ind.

Niver, H. C., Hudson, N. Y.

Noble, A. H., 34 So. Carroll St., Nashville, Tenn.

Noble, F. L., Marlboro, Mass.

Noble, W. P., East Franklin, Vt.

Northey, C. W., Whitefield, N. H.

Northrup, H. J., Lansingburgh, N. Y.

Norton, J. T., Winsted, Conn.

Noyes, Wm. H., East Jefferson, Maine.

Nutting, A. F., Northampton, Mass.

Oakes, Fitz E., Gloucester, Mass.

O'Brien, Sadie, Box 88, Rowley, Mass.

Offutt, Geo., New Edinburgh, Ark.

O'Kelley, Jr., G. W., Harmony Grove, Ga.

Oldfield, Wm., Live Oaks, Fla.
Oldham, J. C., M. D., 9½ East Main St., Springfield, Ohio.
Osgood, Carrie, Westford, Vt.
Osgood, Miss Ella A., Boxford, Mass.
O'Sha, jr., Geo., Washington, Ind. Hives and sections.
Ostrander, Wm. H., Unadilla, N. Y.
Otis, G. H., Hastings, Mich.
Owen, J. W., 64 Maple St., Nashville, Tenn.
Owens, L. J., 129 E. 4th St., Waterloo, Iowa.

Paine, L. K., Hyannis, Mass.
Palmer, E. R., Wycombe, Ont., Can.
Palmer, J. W., Dudley, Pa.
Palmer, jr., James, Rochester, N. Y.
Palmer, S. G., Tobias, Neb.
Pangborn, H. L., Maquoketa, Ia.
Panman, P. K., Lloyds, Va.
Panton, E. W., Stratford, Ont., Can.
Papke, August, Beech Ridge, N. Y.
Parcells, J. W., Box 140, Kirkville, Mo.
Pardee, C. A., Coleburg, Ky. Miller.
Park, I. W., Columbia, Texas.
Parker, C. A., Cambria, N. Y.
Parker, E. L., Coldbrook Springs, Mass.
Parker, R. W., Beaver Dam, Ohio.
Parker, W. H., Newcastle, Ala. Simplicity hives.
Parrish, C. L., Bridport, Vt.
Patterson, J. B., Short Creek, Ky. Bees and supplies.
Pattison, Robert, Holmesburg, Pa.
Patton, Amer, Sterling, N. Y.
Paulus, E. C., Stone Creek, Ohio.
Payne, George W., Box 135, Bentonville, Ark.
Pearse, C. J., Port Perry, Ont., Can.
Peeler, W. J., Blandford, Mass.
Peine, Paul, Martinsburg, W. Va.

Penn, George W., Colfax, Ia.
Penney, Wilbur, Freedom, Me.
Penton, Chas., East Aurora, N. Y. Dealer in sections and foundation.
Percy, C. C., North Hoosick, N. Y.
Perkins, C. S., Essex, Mass.
Perry, Fred. C., Centreville, Mass.
Pert, R. H., South Kent, Conn.
Peters, Albert, Shelby, Ia.
Peterson, H. C., Greenleaf, Kans.
Petine, N. C., Cherry Valley, Ohio.
Pettis, Charles E., Garland, Pa.
Peyton, John R., Haddonsville, N. J.
Pflawn, Mrs. C. H., Dinsmore, Pa.
Phelps, J. M., Chesterfield, Ill.
Phillips, A., Thayer, Kans.
Phillips, John, Hudson, Mass.
Phillips, Kate V., Natural Bridge, N. Y.
Phillips, R. D., West Lenox, Pa.
Phillips, Thomas, Jordan, N. Y.
Phipps, A. Lee, Westboro, Mass.
Phipps, J. M., Hillard, Wyoming Terr.
Pickup, Edmund, Limerick, Ill.
Pierce, Elisha, Waverly, Mass.
Pierce, G. R., Blairstown, Iowa. Hive jacket for winter and spring.
Pierson, J. W., Union Springs, N. Y.
Pike, James M., Rensselaer Falls, N. Y.
Pike, Jonathan, Livermore Falls, Me.
Platt, Thomas, Whitesburg, Pa.
Plum, Matthias, Newark, N. J.
Plumb, E. L., Windsor, Conn.
Plummer, C. W., Winchendon, Mass.
Pomeroy, Leon, Vergennes, Vt.

Poore, F. W., No. 1 Mill St., Haverhill, Mass.
Porrier, O., 314 Common St., Lawrence, Mass.
Porter, A. L., Chittenango, N. Y.
Porter, George H., South Barre, Vt.
Porter, Rufus, Lewiston, Ill.
Potter, A. E., 91 Messer St., Providence, R. I.
Potter, George, Ionia, Iowa.
Potter, jr., H. A., Providence, R. I.
Potts, F. M., Media, Pa.
Powel, R. D., Jerseyville, Ill.
Pratt, E. L., 175 Main St., Marlboro, Mass. Hives, sections, smokers, etc.
Pratt, Luther, Bancroft, Mich.
Pratt, W. S., Blythe, Miss.
Prescott, J. O., Box 166, Lexington, Mass.
Prindall, H. L., Middleton Springs, Vt.
Prindle, A. J., Prospect, N. Y.
Prindle, Chas., Gloucester, Mass.
Proper, Mrs. A. F., Portland, Ind.
Proxmeyar, Louis, Mt. Union, Pa.
Pugsley, C. I., Box 62, Denver, Mo. Agent for Dr. Fallon's medicines.
Purcell, E. J., Clachan, Ont., Can.
Purrington, D. G., Brunswick, Maine.
Putt, A. H., Canal Dover, Ohio.
Pyle, J. T., Abilene, Kan.
Pyke, H. W., Gum Tree, Pa.
Pyrtte, A. S., Lesterville, Mo.

Raabe, A., Ellington, Texas.
Raebel, H. J., West Granville, Wis.
Rainer, W. C., Logansville, Pa.
Raker, G. W., Trenton, Pa.
Ran, Samuel, Columbian, Ohio.

Ray, D. L., Windsor, Vt.
Ray, J. W., Box 453, Xenia, Ohio.
Ream, C. W., Academy, Ind.
Redfield, E. B., Hamburg, N. Y.
Reed, Herman, Abscota, Mich.
Reed, James R., Milford, Wis.
Reed, Thomas, Box 395, Grand Rapids, Mich.
Reed, W. R., Milton, Mass.
Reese, Jno. S., Winchester, Ky.
Reichert, Ches., Thiensville, Wis.
Renne, Wm., Beaverton, Ill.
Rennent, Gustave, W. Richfield, Ohio.
Reppert, Ferdinand, Muscatine, Iowa.
Revel, Wm., Middle Lancaster, Pa.
Reynolds, C., Fremont, Ohio.
Reynolds, I. N., Runnels, Iowa.
Reynolds, J. P., Hydetown, Pa. Hives and general supplies.
Reynolds, R. M., East Springfield, Ohio.
Reynolds, T. B., Box 356, Dayton, Ohio.
Reynolds, Thos. H., Verde, Minn.
Rhodes, P. F., New Castle, Ind.
Rhynuss, C. W., Sharon, Conn.
Rice, A, Elma, N. Y.
Rice, B. J., West Fallbrook, Cal.
Rice, Francis, Hubbardston, Mass.
Rice, O. G., Fitzwilliams, N. H. Farmer.
Rich, Arnold, East Killingly, Conn.
Richards, W. J., Weymouth, Mass.
Richardson, Charles B., Hollis, N. H.
Richardson, E. B., Hollis, N. H.
Richardson, E. E., Middlebury, Conn.
Richardson, H., Dewitt, Neb. Hives, smokers, veils and foundation.

Richardson, Henry, Dewitt, Neb.
Riechert, C., Thiensville, Wis.
Ripley. W. H., West Quincy, Mass.
Robbins, Daniel E., Box 340, Payson, Ill.
Roberts, Alfred, West Concord, N. H.
Roberts, J. B., Box 216, Farmington, N. H.
Robertson, J. H., Pewamo, Mich.
Robinson, A. M., 335 Pleasant St., Worcester, Mass.
Robinson, C. J., Richford, N. Y.
Robinson, G. E., 24 F. H. M., Boston, Mass.
Robinson, L. D., Forkston, Pa.
Robinson, Will B., Upper Jay, N. Y.
Robinson, W. J., Vicksburg, Mich.
Roe, J. A., Union City, Ind. Deals in bee-supplies, all kinds.
Roe, Rev. J. A., Buchanan, Mich.
Rogers, H. J., Stannard's Corners, N. Y.
Rogers, Josiah, Syracuse, Neb.
Rogers, Levi, Oneida Valley, N. Y.
Rogerson, Francis, Churchville, Ont.
Rood, E. H., Whites Valley, Pa.
Root, A. I., Medina, Ohio. Publisher and editor of "Gleanings in Bee-Culture" a semi-monthly periodical devoted to the interests of beekeepers. $1.00 per annum.
Root, O. P., Auburn, Neb.
Ropes, C. F., Box 283, Salem, Mass.
Rose, C. L., Durham Centre, Conn. Hives, sections.
Rose, J. A., Friend, Neb.
Rose, Robert, Glenmorris, Ont., Can.
Rothe, C. F., Charter Oak, Iowa.
Rouse, Henry L., Ionia, Iowa.
Rowe, R. B., Hesperia, Mich.
Rowe, W. J. Greensburg, Pa. Deals in queens.
Rowles, E., Grant City, Pa.
Royall, J. P., Columbia, Mo.

Royse, E. B., West Haven, Conn.
Ruch, Jacob, Mt. Eaton, Ohio.
Rumery, R. W., Biddeford, Maine.
Rundell, Geo., Beach Ridge, N. Y.
Rupert, John H., Woodcock, Pa.
Ruse, F. M., New Hartford, Ill.
Russell, Esau, Ida Grove, Iowa.
Russell, Mrs. E. A., Ord, Neb.
Russell, J. J., Bradford, Pa.
Russell, Jas. A., Corning, Iowa.
Russell, L. J., Lapeer, Mich.
Russell, S. A., M. D., Newmarket, Ont., Can.
Russell, W. H., Burnet, Texas.
Rust, J. L. & Co., New Carlisle, Pa.
Ryan, R. R., Bradshaw, Neb.

Saddlemire, Rev. Ira, Gallupville, N. Y.
Sagar, Seth, Grafton, Wis. Woolsorter.
Sage & Son, F. I., Weathersfield, Conn.
Sage, Hollister, Springfield, Mass.
Salisbury, F. A., Box 44, Syracuse, N. Y.
Sampson, A. D., Winthrop, Ia.
Sampson, A. W., Churchville, N. Y.
Sanborn, A. A., Westfield, Mass.
Sanborn, Jacob B., East Tilton, N. H. Farmer and carpenter.
Sanford, T. S., New Castle, Pa. Sanford's reversible hive.
Sanderson, C. S., San Luis Rey, Cal.
Sanderson, E. I., West Townsend, Vt.
Sands, C. B., Pottsville, Pa.
Sangster, William, Huntingdon, Que., Can.
Sappington, J. Will, Ashland, Mo.
Saum, Wm. A., Alexanderville, Ohio.

Saunders, H. F., Lawrence, Kans. Market gardener.
Savage, D. F., Hopskinsville, Ky. Bees, queens, hives, etc.
Savery, C. T., Taunton, Mass.
Sawin, F. L., 64 Grove St., Fitchburg, Mass.
Sawyer, Harry, 1301 So. Main St., Burlington, Iowa.
Sawyer, W. F., Harvard, Mass.
Sayman, G. M., Box 902, Piqua, Ohio.
Scenter, E. M., Center Lyle, N. Y.
Schaeffer, J. W., Port Angeles, Wash. Terr.
Schanks, L., Scotch Ridge, Ohio.
Schell, Geo. D., Barron Lake, Mich. Sections and foundation.
Schenck, S., Beach Ridge, N. Y.
Schemelbzer, C. K., Scholl's Ferry, Oregon.
Schmidt, E. C., Verona, N. J.
Schmidt, Edward, Botkins, Ohio.
Schmidt, F., Millington, N. J.
Schmidt, F. A., Clinton, N. Y.
Scholls, Chas., Rochester, N. Y.
Schrader, A. T., Newtown, N. Y.
Schumans, Jacob, Laporte, Ind.
Scott, B. D., Ovid Centre, N. Y.
Scott, G. B., 16 Broad St., Room 72, New York, N. Y.
Scott, H. C., Gibson, Pa.
Scott, J. A., Box 243, Hamilton, Ohio.
Scoven, J. S., Kokomo, Ind.
Sears, Peter, Barnesville, Ohio.
Seaveny, Herbert, Box 63, Auburndale, Mass.
Seawell, F. E., Uvalde, Tex.
Seely, H. M., Harford, Pa. Hives, sections and brood-frames.
Seely, Wm. J., Amherst, Mass.
Segar, Seth, Grafton, Wis.
Seitz, William, Hustisford, Wis.

Sellers, A. D., Jefferson City, Mo.
Senor, Chas., Richland Centre, Pa.
Sessions, N. G., North Woodstock, Maine.
Sexton, J. L., Elkhart, Wis.
Shank, Jr., John, Box 21, No. Springfield, Mo.
Sharpe, Walter, Sobo, Ont., Can.
Shattuck, E. W., Springfield, Mass.
Shattuck, Samuel, Wendell Depot, Mass.
Shaver, Jos. E., North River, Va.
Shaver, Jos. E., Friedens, Pa.
Shearman, J. T., New Richmond, Mich.
Sheldon, Rev. L. H., Andover, Mass.
Shely, Jas. N., Nicholasville, Ky.
Sheneman, E. M., Pharisburgh, Ohio.
Sherman, Elbridge, Mansfield, Mass.
Sherman, Mrs. S. E., Salado, Texas. Beekeeping and poultry raising.
Sherman, Walter, Newport, R. I.
Sherwood, B. F., Central Station, W. Va.
Shilling, Frank, Jewett, Ohio.
Shoemaker, J. N., Chambersburg, Pa.
Shoup, Geo., Hubbell, Neb.
Shrekegorst, Clark, Putneysville, Pa.
Shriner, J. T., Waynesburgh, Pa.
Shropskin, Thos. A., M. D., Clintonville, Ky.
Shutz, J. H. J., St. Louis, Mo.
Sibley, Frank, Westboro, Mass.
Sidgwick, W. H., Grantville, Ohio.
Simmons, J. H., Pendergrass, Ga.
Simmons, J. P., Forest Lake, Mo.
Simmonton, W. S., Cameron, W. Va.
Simons, R., Howard, Kans.
Simpkinson, Miss Mary, Killbuck, Ohio.
Simpson, Ed. C., Richburg, S. C.

Simpson, J. L., Tonganoxie, Kans.
Simpson, Louisa, Lidcote, Ont., Can.
Simpson, M., Levita, Texas. Deals in bee-supplies generally.
Skinner, Alonzo, Zenos, Arizona.
Skinner, R. T., Abbott, Iowa.
Slack, A. A., Lawrence, N. J.
Slack, Thos., Waterloo, P. Q., Can.
Slaughter, Rev. E. B., Down's Chapel, Del.
Slocum, C. M., Easton, N. Y.
Singerland, E. E., Troy, Pa. Simplicity hives, etc.
Smailes, G. F., New Moscow, Ohio.
Smedley, C. O., Grand Rapids, Mich.
Smith, A. F., Plaquemine, Iberville Parish, La.
Smith, Arthur F., Salem, Mass.
Smith, C. H., Pittsfield, Mass.
Smith, C. R., Wakatomica, Ohio.
Smith, C. W., Wellesley Hills, Mass.
Smith, D. H., Roxie, W. Va.
Smith, E. C., Glenville, N. Y.
Smith, F. L., Chittenango, N. Y. Smokers, foundation and hives.
Smith, G. E., Kingston, N. Y.
Smith, J. P., Sunapee, N. H.
Smith, Josiah, Upland, Del.
Smith, L. J., Montreal, Can.
Smith, M. A., Anniston, Ala.
Smith, Norbert, Damascus, Ill.
Smith, Peter L., Castile, N. Y.
Smith, S. P., Union Grove, Ill.
Smith, Wm. I., Hillegass, Pa.
Smith, Wm. M., Mainesburg, Pa.
Smith, W. T., La Porte, Ind.
Smith & Templet, Plaquemine, Iberville Parish, La.
Snaveley, W. W., Bellwood, Neb.

Snell, F. A., Milledgeville, Ill.
Snow, C. W., Rodman, N. Y.
Snow, S. E., Kingsville, Ohio.
Snyder, W. B., Shelby, O.
Somerford, W. W., Navasoto, Texas.
Southwick, H. J., New Decatur, Ala.
Sparlins, J. W., Bowmansville, Ont., Can.
Spaulding, G. H., Augusta, Maine.
Spaulding, Will, Hoytville, Mich.
Speer, Teresa, Clio, Iowa.
Spencer, Geo. W., Plainville, Conn.
Spencer, M. L., Little Genesee, N. Y. Deals in bee supplies.
Spencer, O., Montrose, Colorado.
Sperry, Lewis, 345 Main St., Pa.
Sperry, Mexico, La Harpe, Ill.
Spitler, Geo., Mosierstown, Pa.
Sprague, C. H., Providence, R. I.
Springer, David S., Berne, Indiana.
Squire, D. E., Monson, Mass.
Stachelhausen, L., Selma, Texas.
Stacy, Wm. H., Mifflin, Minn.
Stacy, W. M., Edgar, Neb.
Stalcup, J. G., Park, Ind.
Staley, H. K., Pleasant Ridge, Ohio.
Staples, L. D., Portland, Mich.
St. Clair, J. W., 156 Market St., Lynn, Mass.
Stead, G. B., Putnam, Conn.
Steader, S. B., Bismark, Ill.
Stearns, H. A., 341 Fort St., W. Detroit, Mich.
Stedman, Oliver, Wakefield, R. I.
Steel, J. N., Hutchinson's, K. C. R. R., Ky.
Stenger, J. J., Fort Madison, Iowa.
Stephens, J. O., Lancaster, N. H.

Stephens, Wm. B., Stephenson's Mills, N. Y.

Sterling, W. R., Roundeau, Ont., Can. Supplies of all kinds.

Stern, J. M., Frankenmuth, Mich.

Stevens, M., Pennellville, N. Y.

Stevens, R. M., Pocomoke City, Maryland. Architect.

Stewart, Chas., Sammonsville, N. Y.

Stewart, J. C., Hopkins, Mo.

Stewart, John, Independence, Pa.

Stewart, Leslie, Jefferson, N. Y.

Stewart, W. B., Vienna, Ohio.

Stewart, W. H. H., Galt, Ill.

Stickney, G. W., Beverly, Mass.

Stillman, Edwin A., Canadice, N. Y.

Stinger, Grant, Culbertson, Nebraska.

St. John, H. P., Greenwich Sta., Ohio.

Stockman, S. H., East Auburn, Maine. Dealer in bee-supplies.

Stockwell, Geo. A., Providence, R. I. Beekeepers' supplies.

Stoler, D. M., Saxon, Pa.

Stollard, F. M. L., Tarlton, Ohio.

Stonaker, D. V., Old Bridge, New Jersey.

Stone, L. J., Littleton Common, Mass.

Storer, Edward M., Hawks Park, Fla.

Storrs, C. H., Lebanon, N. H.

Stover, P. E., Waldoboro, Maine.

Stradley, G., Fillmore, Ga.

Stranahan, A. J., Romeo, Mich.

Stratton, Rufus, Hazardville, Conn.

Straw, A. S., Edwardsburg, Mich. Deals in foundation and sections.

Strickland, T. B., Pleasant Light, Ala.

Strickler, Morris W., 131 N. Duke St., York, Pa.

Stringham, I. J., 120 E. 87th St., New York, N. Y.

Stroberg, J. F., Macon, Ga.

Strofield, August, Martinsville, N. Y.
Strogden, O. E., Ambler, Pa.
Strong, C. B., Tidioute, Pa.
Stroup, W. S., Sweet Home, Ind.
Stump, Rev. G. E., Newell, Iowa.
Suffelt, H. W., Norwood, Mass.
Sullivan, Samuel, 1145 Lane St., Hamilton, Ohio.
Summerfield, 22 Lorain St., Toledo, Ohio.
Summers, S. N., Wartburg, Tenn.
Sunday, P., Goodels, Mich. Queens, hives, sections, etc.
Surles & Son, Worcester, Mass.
Suter, William, Welcome, Minn.
Sutter, Jos., Layton Corners, Mich.
Styer, E. R., Organtown, Pa.
Swain, A. M., Tyngsboro, Mass.
Swan, H. S., White Cloud, Mich.
Swarty, W., Ahnapee, Wis.
Sweetland, E., Dryden, N. Y.
Swick, B. F., Salem, Oregon.
Swinson, A. L., Goldsboro, N. C.

Taff, Fred N., Millington, N. J.
Talcott, H. P., Room 13 2015 1st Ave., Birmingham, Ala.
Tallcott, T. H. L., Glastonbury, Conn.
Talmage, W. P., Milton Centre, Ohio.
Taylor, J. H., Mohawk, N. Y.
Taylor, J. N., Greely, Iowa. Carriage maker and carpenter.
Taylor, J. W., Ozan, Ark.
Taylor, S. W., Harveyville, Pa.
Taylor, W. W., Down's Chapel, Del.
Teague, Geo. H., Wakefield, Mass.
Tefft, J. W., Collamer, N. Y.
Terry, J. T., San Mateo, Cal.

Tewell, John, Arborville, Neb.
Tewinkle, G. P., Clymer, N. Y.
Theberath, Chas. H., Cor. Clinton & 5th Aves., Newark, N. J.
Thomas, A. B., 41 Kimble St., Utica, N. Y.
Thomas, A. G., Vassalboro, Maine.
Thomas, C. F. Dorchester, Neb.
Thomas, G. W., Wakefield, Mass.
Thomas, Noah, Horatio, Ohio.
Thompson, B. A., Malden, Mass. Contractor and builder.
Thompson, G. M., Grand Junction, Iowa.
Thompson, H. S., 215 So. Main St., Elmira, N. Y.
Thompson, J. B., Centerville Sta., N. Y.
Thompson, J. W., Lester, Minn. Dealer in Italian queens.
Thompson, Mace, Curwensville, Pa.
Thorn, Eugene, Chelsea, Vt.
Tibbetts, G. D. W., Berwick, Maine.
Tibbetts, Mrs. Oliver, So. New Market Junction, N. H.
Tiffany, T. J., Kingsley, Pa.
Timboth, Alexander, Huntingdon, Pa.
Timpe, Jacob T., Grand Ledge, Mich.
Tinker, C. O., Ashtabula, Ohio.
Todd, J. E., Unadilla, N. Y.
Todd, Robt., Whitehall, Ill.
Topping, Henry, Springfield, Ont., Can.
Torlin, O. L., Smith's Landing, Ohio.
Tower, Almon, 307 N. 24th St., Lincoln, Neb.
Tower, W. J., 82 Adams St., Rochester, N. Y.
Towne, Frank H., Montpelier, Vt.
Towns, Isaiah, Primrose, Ohio.
Tracy, T., Nashua, Iowa.
Tracy, Wm. J., Burrillville, R. I.
Tripp, J. H., Kibbie, Mich.
Tripp, M. V., Dorchester, Mass.
True, J. A., Fostoria, Ohio.

Trueblood, Francis, Archer, Fla.
Truxworth, Wm., Reed City, Mich.
Tucker, J. D., Collinsburg, La.
Turner, Albert, Willimantic, Conn.
Turner, G. H., Bristol, Conn.
Turner Brothers, Lincoln, Vt. Beekeepers' supplies.
Tuttle, A. L., So. Edmeston, N. Y.
Tuttle, W. W., Effingham, N. H.
Twining, Dana, Frankfort Station, Ill.
Twining, W. A., Pineville, Pa.
Tyler, J. M., Box 30, Bowling, Ky.
Tyrrell, C. M., Pittston, Pa.
Tyzzer, G. R., Wakefield, Mass.

Vandruff, W. S., Waynesburg, Pa. Natural principle beehive.
Van Osgood, C. L., M.D., Allensville, Ind.
Viar, J. W., Floyd, Va.
Vineyard, J. W., Cornwallis, Oregon. Farmer and stock raiser.
Vrets, A. G., Box 225, Holton, Mich.

Waddell, Alex., Claremont, Ont., Can.
Waddell, Wm., Nilestown, Ont., Can.
Wadman, J. H., Riverside, N. J.
Waggoner, I. R., Grantville, Kans.
Wagner, Jacob, Amana, Ia.
Wagner, L. M., Dayton, Mo.
Wagner, M., Waconia, Minn.
Wait, John H., Novi, Mich.
Waite, O. E., Springfield, Vt.
Waldridge, Bion, Stony Fork, Pa.
Walker, H. W., Box 142, Somerset, Pa.
Wallace, C. A., Merrimac, Mass.

Wallace, J. V., Gretna, Neb.
Wallace, Jonathan, Sevier, Kans.
Waller, J. J., Pleasant Ridge Park, Ky.
Ward, Wm. A., Brunswick, Me.
Ward, Wm. S., Fullers Station, N. Y.
Wardwell, Fannie E., Box 395, Stamford, Conn.
Ware, F. H., E. Harrisonville, N. H. Sections and foundations.
Waring, Frank, Phillipsburg, Pa.
Warner, E., Milford, Pa.
Warner, N. S., Box 57, Dysart, Ia.
Warner, Wm. H., Box 337, Albany, Ore.
Warren, Alden, Groton, Mass.
Warren, Thos. J., Magnolia, N. J.
Waterhouse, Chas., Bayou Chene, La.
Waterman Brothers, Chester Depot, Vt. Hives, sections, hives, etc.
Waters, H. N., Lowville, N. Y.
Waters, J. F., Horse Head, Md.
Watkins, Arley, Brock, Neb.
Watson, A. T., Plainfield, Mich.
Watts, F. R., Box 91, Lawrenceville, Ill.
Webster, Charles, West Winsted, Conn.
Webster, Delia, Norwich Corners, N. Y.
Webster, H., M.D., Byron, Mich.
Webster, Miles, Fishers, N. Y.
Webster, W. A., Bakersfield, Cal.
Weed, Eddie, Charter Oak, Ia.
Weed, J. R., Orange, N. J.
Weeks, G. A., Hartwick, N. Y.
Weigel, George, Le Roy, N. Y.
Weir, J. C., Cochranton, Pa. Hives, frames, sections, etc.
Weiss, Ermil, Topton, Pa.
Wells, H. L., Defiance, Ohio.

Welsh, jr., James R., Derrick City, Pa.
Wentworth, L. W., Searsport, Me.
West, D. J., Smithfield, Pa.
Westcott, E. L., Fair Haven, Vt.
Weston, Elijah, Osceola Mills, Pa.
Wheatley, T. H., East Brookfield, Vt.
Whedon, John N., Rupert, Vt.
Wheeler, E. E., New London, Conn.
Wheeler, G. T., Mexico, N. Y. Hives, sections, smokers, etc.
Whetsel, Samuel, Avilla, Ind.
Whitcher, R. H., Patton, Ind.
Whitcomb, N. E., West Acton, Mass.
Whitcomb, Orrin, Argyle, N. Y. Custom boots and shoes.
White, E. H., Saxton, Pa.
White, G. H., Deerfield, Ia.
White, J. J., Lake Worth, Fla.
White, Jesse, Perry, Ia.
White, S. S., Rock Ledge, Fla.
White, W. B., Chestertown, N. Y.
White, W. R., Concord Church, W. Va.
Whitford, G. M., Arlington, Neb.
Whitmore, W. R., Moscow, N. Y.
Whitney, F. A., Leominster, Mass.
Whitney, S. F., Watertown, Mass.
Wilbur, R. M., New Milford, Conn. Hives, sections and foundation.
Wilcox, David, Orford, N. H.
Wilcox, J. W., Scales Mound, Ill. Foundation, sections, etc.
Wiley, Sarah E., 77 Montgomery St., Poughkeepsie, N. Y.
Wilkins, O. F., International Bridge, Ont., Can.
Williams, Mrs. M. G., 28 Highland Park Ave., Roxbury, Mass.
Williams, Mrs. J., East Douglass, Mass.

Williams, J. D., South America, Ill.
Williams, J. G., Holland Patent, N. Y.
Williams, Jeff., Tustin City, Cal.
Williams, Peter, Cowan, Tenn.
Williamson, Joseph, Earlham, Iowa.
Willis, J. L. M., Eliot, Maine.
Wilms, F. J., San Jacinto, Cal.
Wilsey, M. J., Dewey, Kans.
Wilson, A. D. M., Plymouth, Iowa.
Wilson, A. Jennie, Macedon, N. Y.
Wilson, J. A., So. Middleton, Ont., Can.
Wilson, O. J.. 604 21st St., Moline, Ill.
Wilson, T. M., Shelocta, Pa.
Wing, C. H., Marion, N. C.
Winslow, H. S., Randolph, Maine.
Winter, O. F., Winterton, N. Y.
Wirt, Geo. W., Oronoco, Neb.
Wirth, Wm., Newport, Vt.
Wiseman, Nauson, Woodstock, Va.
Witcomb, O. M. East Coy, N. Y.
Witkipp, J. T., St. Johnsburg, N. Y.
Witschey, John, Fairview, Kan.
Wixom, A. R., Box 82, Farmington, Mich.
Wolcott, Mrs. F. A., Shoreham, Vt.
Wolf, Jacob, Lathrop, Cal.
Wolf, L. E., Mercersburg, Pa.
Wolf, J., Lathrop, Cal. Deals some in queen bees.
Womelsdorf, D. W., Huntington, Pa.
Wonson, A. K., East Gloucester, Mass.
Wood, D. E., Greenlawn, N. Y.
Wood, R. G., East Lake, Ala.
Woodbury, D. B., Paris, Maine. Originating florist.
Woodbury, J. L., Canaan, Maine.
Woodman, G. T., South Braintree, Mass.

Woodward, W. M., Custer Park, Ill.
Woodward, R. B., M. D., Somerset, Ohio.
Woodworth, R. M., Box 868, La Salle, Ill.
Wortman, A., Seafield, Ind. Bee-hives, sections and smokers.
Wright, F. M., Enosburg, Vt.
Wright, Rev. J. E. M., Berkley, Mass.
Wright, Jno., Grand Rapids, Mich.
Wycuff, Thos., Adel, Iowa.
Wyeth, Alonzo, Townsend Harbor, Mass.

Yeagley, F. B., New Somerset, Ohio.
Yetter, E., Veedersburg, Ind.
Yorks, W. K., Lima, N. Y.
Youll, James, Mapleton, Iowa.

Zink, W. T., Junction City, Mo. Simplicity hives and fixtures.
Zwahlan, John, Castle Dale, Utah Terr.

PRACTICAL HINTS REGARDING THE SUCCESSFUL MANAGEMENT OF THE APIARY.

We promised the purchasers of this work certain essays upon the subject of bee culture. In compliance with that promise the reader will find the following pages devoted to matter of great interest to those who keep bees.

We present no theory, but actual facts—all the result of long experience and by those beekeepers who are well known to every reader of this book. What they recommend and advise will be accepted and generally practised.

One of the most important subjects connected with bee culture is the winter problem. How to winter bees and have each colony strong in numbers at the commencement of the honey harvest is an art that but few beekeepers have acquired. Yet there are those who winter their bees successfully year after year. Just how it is done and the methods practised may be found in the essays given on the following pages.

The first essay is by Dr. G. L. Tinker, of New Philadelphia, Ohio, a beekeeper of long experience and an authority upon any question connected with apiculture.

The Winter Problem or How to Winter Bees.

With the knowledge of this subject gained within the last five years, there should be no difficulty in wintering bees. It is true there is still difference of opinion on minor points but the principal requirements on which success depends I believe are now quite generally agreed upon. The first of these is protection which involves the question of temperature. The writer is known to most beekeepers as the champion of the doctrine that cold is the primary cause of most of our winter losses as against that most fallacious of all the theories that have been set forth of first cause, viz., the pollen theory. But I am pleased to-day to record that my position on this question has been almost unanimously conceded. Protection from cold is now regarded as

one of the greatest safeguards against bee diarrhœa and not the removal of bee-bread from the combs.

Next after the protection stands the question of food. I have maintained and still hold that good natural stores are first in value and reliability. Sugar syrup has been tried with success in many instances, but the fact remains that few bees comparatively have been wintered upon sugar stores. And in these few cases when put to the test of severe cold there have been many heavy losses. Hence I can but think that bees winter best on the food that nature has provided for them.

However, I believe sugar syrup infinitely preferable as a winter food to the sweet excretions of aphides which bees sometimes gather and store in the combs. It is also no doubt preferable to any inferior quality of honey that may be stored in the fall.

Thin fall honey is especially deleterious and should be either extracted and good food substituted, or thick honey or syrup fed over it. Thin honey may be known by its running out of the combs when held horizontally.

Ventilation.

Bees require free ventilation in winter. They throw off a large amount of moisture in their breath that must have a ready means of exit from the hive or the bees will become restless,—a never-failing indication of something wrong. All undue loss of heat must be prevented and it can be easily retained by giving free bottom ventilation and allowing no upward movement of air except through wood or other very close porous covering. In my experience the best and most economical covering is solid unpainted wood. Simply place a thin board over the brood-chamber so as to leave a bee-space over the frames in time to have it well propolized and I will guarantee it to hold the heat to the comfort of the bees and at the same time give an almost unobstructed exit to all moisture, and that too, directly through the board and the propolis.

I am prepared to say from ample experience that every kind of upward ventilation through free openings or loose porous coverings is pernicious and liable to disaster; for the life of a colony of bees subjected to cold goes out with the loss of heat which is forced strongly upward through free outlets by the pressure of cold air coming in at the entrance. We can now see why bees instinctively stop up all crevices with propolis. It is to prevent

the loss of heat which nature has taught them is life; and had beekeepers been as wise as the physiologist who said "heat is life," we should have saved thousands upon thousands of colonies lost in wintering, largely through the follies of upward ventilation. It has been a dear lesson indeed that has taught us that our theories of absorbents have been all wrong. We now know, if we can retain the heat, there is no difficulty about getting out the moisture. The heat expels it as heat expels moisture from a kiln of lumber even when sealed up as tight as it can be made, and it is heat that causes evaporation of moisture and dryness everywhere.

Where the temperature about the hives never goes below 40° or 54°, as in cellar wintering, we have a different state of things than exists in out-door wintering. Even with very free bottom ventilation if the hive is tight on top the bees may get too warm and become restless. Hence it will be seen that bees must be ventilated to suit their surroundings, the leading object being always to keep them in winter confinement in as torpid a state as possible; for we have learned that activity means waste of tissue, excessive consumption of food, loss of vitality and premature death. Spring dwindling can be traced to no other source. The bees are worn out with activity, with constant struggles, with adverse conditions of their life. Successful wintering means conservation of vitality which is best accomplished through what is known as

Hibernation.

This state which bees begin to enter, upon the approach of frosty nights in the fall, is one which cannot elicit too close attention by beekeepers; for upon it hinge the greatest successes of the future. It is simply a conservative state that the bee enters, enabling us to bring the bee of the fall to the bee of the spring with all of its vitality and working capacity intact, and unchanged by the intervening time. A bee's life is only too short but its length is measured by its activity; hence, to span the long winter months, it must have rest from its labors. Nature has provided this rest in what we shall henceforth call hibernation. It is not of course the profound hibernation of many other insects, nor does anyone claim that. The bee becomes torpid, lethargic and respires imperceptibly. There is considerable reduction of temperature of the cluster that existing in that state of activity to the lowest point consistent with vital action,—a slight respiration and

imperceptible movement. The reduction of temperature is about 20°, enough to justify those who are claiming true hibernation for bees that they are indulging in no gibberish. It is a state, however, requiring food at intervals of from three to five days. I only know that they have regular feeding times when the whole colony becomes active and each bee seems to help itself to honey. When all have feasted they settle into the torpid state again.

A colony of bees properly hibernating will consume not more than one pound of honey per month and this state continues if all goes right, from the first of November to the first of February, when breeding commences. More heat is then required and the bees are no longer in a perfectly listless state. The patch of brood started will be, however, quite small, usually not over four inches in diameter, so that no great increase of temperature is required. They start no more unless they have frequent flights, until in March when extensive breeding begins and hibernation ceases altogether.

Hibernation is secured only at a low temperature. It commences at a point below 50° and becomes more profound until we reach 41°. Going below that it gradually becomes less until below 32°. Going below this point the bees become active and the labors, destructive to their vitality and life, begin. Severe cold and currents of air interrupt hibernation and should be provided against in order to the most successful wintering. Before bees are placed in cellars, the cellars should be cooled to 41° by opening hatchways or ventilators at night, and the temperature should be kept down by the same means if inclined to rise. If the temperature goes below 41°, I would advise raising it by the use of an anthracite coal stove and keep it as near 41° as possible till the first of February. Then raise the temperature to 48° and keep it there until the bees are set out. Two very serious mistakes are often made in placing bees in cellars: the first is in having the cellar too warm; and the second is in allowing currents of fresh air to enter through sub-earth pipes. Both of these conditions prevent hibernation and tend to restlessness.

In hives protected with chaff, sawdust, etc., we get a near approach to the condition secured in a single-walled hive in a repository; and, if the protection is sufficient, bees will winter out-of-doors as well as in. But it is plain, if we are to secure uniform temperature, we must winter in special depositories. My

objection to chaff-hives is the cost and labor of preparation for winter.

Two years of added experience enable me to give emphasis to every word and line of the above article and I have now only the following to add :—In localities where the winters are not so cold as to prevent an occasional flight in mid-winter, bees will winter better out-of-doors in chaff-hives than in cellars. But if bees are placed in cellars as above and about the first of March (on a suitable day for a flight) are removed to the summer stands and packed, they will do just as well and consume less honey than if left out of doors all winter. Again, bees do better in the spring if protected than in single-walled hives, that is, they are not liable to spring dwindle, breed up faster, take less stores, swarm earlier, and make more surplus honey than the unprotected colonies, which are more severely affected by the cold windy days and frosty nights of spring.

The second method is by Mr. P. R. Russell of Lynn, Mass. Mr. Russell is one of the model beekeepers of the period and has had wonderful success in the management of the apiary. His method of wintering is as follows :

To solve the problem of wintering bees successfully requires the application of a little common sense in connection with practical experience. In the early days of my beekeeping, I had very poor success in wintering, not having a proper knowledge of the matter. I then used the single-wall Langstroth hive holding ten frames, and sometimes I attempted to winter them on their summer stands, and at other times in the cellar. In the former case, I did not contract the brood-nest at all, or give much of any protection, supposing the hive was all the protection needed, but I found out my mistake after a while. Wintering in the cellar proved a failure also, as my cellar was damp and unsuitable.

Now, for six winters past, I have left my bees on their summer stands packed in planer-shavings, mostly, and with very satisfactory results.

In September, I contract my hives to their winter status by removing all surplus boxes and extra brood-frames, never leaving in more than eight combs, and from that down to six according to size of colony. By Oct. 1, if any are found having less

than twenty-five pounds of stores for winter they are at once fed up to that figure; then I let them set until I get ready to pack them, meantime throwing over the brood-chamber a plenty of old woollen mats and other things (by the way, I am a great hand to keep the bees covered up warm at all times, summer or winter). Early in November, I pack for winter by filling the vacant space between brood-combs and outside case with shavings. There is no particular merit in shavings, over other material, only they happen to come handy to me. I now remove the honey-board and cover the combs with a wire-cloth screen, allowing a bee-space between. This screen answers also as the best possible winter feeder for feeding the sugar and honey mixture. If this screen is put on too early in the fall, or left on too late in spring, the bees will propolize it badly. Over the screen I apply plenty of comfortables or sacks filled with leaves or shavings at least six inches thick. In the cover, ample ventilation is provided by a two-inch hole on opposite sides and as near the roof as possible. I never pack the cover solid full, because I want space for the wind to blow freely through and through, in at one hole and out at the other. I count this ventilation over the packing as very important, and not at all inconsistent with keeping the brood-nest warm. Everybody knows that dry clothing is much warmer than damp, and this *ample* circulation of air is just what keeps them dry, and consequently warm and comfortable, if they have plenty of packing. It is surprising how much dampness a colony can develop in cold weather, and I attribute my success largely to the fact of knowing how to get it out of the hive without chilling the bees too much. Keep them warm and dry is a good motto. Sunshine never harmed my bees in winter, but bleak and windy locations are bad. Snow and ice are harmless; indeed, I rather like to see my hives well buried in snow. However, I try to keep ice away from the entrance somewhat, and cant the hive forward a little to prevent any water from running in, also raise the hive from the ground just enough to avoid snow water. I never cut any holes in the combs for winter passages (useless). I never pay any attention to pollen. It is true my bees will spatter their hives quite a lot in spring when taking their first flights, but it is seldom that I lose a colony from this cause. But, says one, don't the rain and snow beat in those great holes in the cap? I answer, yes, a very little at times, but it soon dries out again, and withal, much more dampness passes

out than ever comes in. I have tried holes of one inch in diameter, also an inch and a half, but I find one and three-fourths about the correct size, and they should always be covered with wire cloth. I begin to unpack my hives about the first of May, or when they begin to call for more room. The standing or closed-end frame seems best adapted to my system of wintering. The new Bay State hive is of this description and must at least be a good one for out-door wintering. I don't think I should care to use chaff-hives or those in which the packing is permanent, as they are too expensive and heavy to handle, also liable to get water-logged. If packing becomes wet and frozen it is worse than none at all.

In my opinion packing is much better than a mere dead-air space. Did you ever see an ice-house built on the "dead-air plan" without being packed with spent-tan or sawdust? The same principle applies to the bee-hive. We pack our bees to keep the animal heat in, and we pack our ice to keep the solar heat out. The best packing material is that which is the poorest conductor of heat and cold. Water is a good conductor; therefore, dampness destroys the value of the packing.

When I go to bed on a cold winter night I don't cover myself up in enamel cloth or a rubber blanket expecting to keep warm by preventing a circulation of air. Did I do so, I should find myself damp and cold, and sickness would soon follow. But I cover myself with porous woollen blankets, that pass off dampness and keep me dry and warm. Why not give the bees the benefit of the same logic? I am well aware that bees winter at times under almost any kind of treatment, and again die out with the best of care. But these exceptions should not impinge against the rule of applied common sense.

I will now describe the method practised in regard to wintering in the Bay State Apiary.

All the colonies kept in our apiary are wintered on the summer-stands. This we could not do successfully were our bees in single-wall hives. A good double-wall hive is the best, and in fact is the only hive which I think should be used for outside wintering.

I believe no one claims that bees do not sometimes winter well in single-wall hives. They do sometimes winter well; and no one cares to assert that bees are certain to winter even in

double-wall hives. Yet the latter hive is the proper one to use so far as experience has solved the winter problem. Not only in winter does the double-wall hive have the advantage over the single-wall hive, but in spring more particularly.

Bees may pass safe through the winter months and be in fair condition on the first day of April, yet a colony cannot be considered safely wintered that has not gone through to the 10th of May. At that date if the colony is a strong one with plenty of bees and brood they have wintered through in perfect condition.

To accomplish such a result the following method has been practised for many years in the Bay State Apiary: It is of course understood that the proper amount of food, say twenty-five lbs., must be in the combs and sealed before October 1. Each colony should have a good queen, and this means one that is young and properly bred. The colony should consist of at least, four quarts of bees that were reared after August 1. These conditions are absolutely necessary for the safe wintering of a colony of bees.

The hives are placed two feet above the ground, this is necessary to protect the bees from the dampness of the earth in winter and to keep the front of the hive above the snow, and will also obviate the necessity of removing the snow except after heavy storms.

In the double-wall hives we use there is a space of two inches between the walls of the outer and inner hives, and if the snow is banked against them all winter it can do no damage.

Packing and its disadvantages.

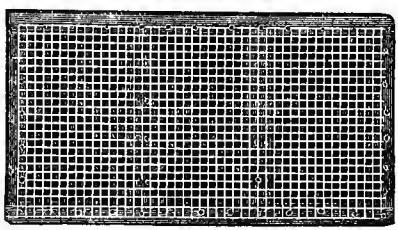
If the hives are so constructed that no moisture can get through the outer case at any joint, the space may be filled with chaff, planer-shavings or hay that is cut about two inches long. Unless the packing can be kept very dry none should be used. I will give the reasons why I so advise.

In all the hives I have packed, the combs were nearly ruined by mould. In some instances the moisture got in through the outer-case and at other times it came from the bees and seemed to penetrate the entire packing, so much so, that the hive and combs were damp until the approach of warm, dry weather.

I really cannot see any advantage of the packing during the winter months. If the hives are made in a workmanlike manner the cold air cannot reach the brood-chamber. In my experience *spring* packing is far more important than in winter.

Packing over the combs.

The proper place to pack is over the combs. This should be done not only to prevent a draft of air through the brood-chamber but also to retain the heat and absorb the moisture arising from the bees. Our plan is this—a wire cloth honey-board is first placed on to give the bees passage-way over the frames for the bees to pass from one comb to another, and also so that feeding may be done in the winter or spring, and, also, in order that the colony may be examined at any time with little or no disturbance to the bees. We first place upon the honey-board a heavy duck mat. This article is not within reach of beekeepers who live far from seaport towns. As new goods of this kind would be most too expensive, we obtain it, second-hand, of the sail-makers, for about ten cents per pound. One pound will make two mats for L. hives. These mats are very heavy and durable.



Wire-cloth honey-board.

The next thing to put on is the cushion. This is nothing but a cotton-cloth sack, made from the cheapest grade goods. Three sides are sewed up, the sack is then filled with hay cut about two inches long. Most beekeepers I believe use chaff and planer-shavings for the same purpose, and we did so up to the fall of 1887. At that time I did not have at hand sufficient chaff to fill all the cushions I wanted to use, and hay was substituted in its stead. I was happily surprised in the spring, when examining the colonies, to find that those that had the sacks of hay were in the cleanest and brightest condition. The hay, being more open, let the dampness through more freely than any of the other material used, while at the same time it was sufficiently close to prevent too much ventilation through the brood-chamber. I am so well pleased with the experiment that hay only will be used in the future in the Bay State Apiary with which to fill the cushions or pack around the hive for winter protection.

Removing the packing in spring.

I never have made it a practice to remove the packing from the hives until it is time to put the sections on. In fact, special pains are taken in the spring to protect the brood-chamber from cold and to retain all the heat as much as possible. The warmer the brood-nest is kept (that is of course to the natural degree) the more rapidly brood-rearing will go on.

Contracting the entrance as a means to retain heat.

Every apiary should be provided with the entrance blocks which Mr. Langstroth has the credit of inventing. These blocks give perfect and easy control of the entrance at any time of the year. In order to promote brood-rearing the entrance should be contracted to about half an inch on cool days and nights. I know of no way that it can be so quickly and easily done as with the entrance blocks. When the weather is warm, the entrance can be enlarged by merely changing the position of one of the blocks. Unless the colony is a very large one an opening $2\frac{1}{2}$ inches in width is plenty large. I rather like the idea of making the entrance so small that the bees crowd a little during the busiest part of the day. There is no serious disadvantage when they do so if the weather is cool, and no honey is being gathered. The bees seem to enjoy it, and I am inclined to think they feel encouraged while jostling against each other in passing out of and into the hive. It really seems more like business. Too large an entrance is a disadvantage to any colony. During hot weather I give an entrance the whole width of the brood-chamber.

Shading the hives in winter.

When the bees have been confined in the hives several weeks they are easily induced to take a flight, and if the warm rays of the sun strike the front of the hives during the middle of the day, many bees will venture out, and before they can return will become chilled, and drop to the ground or on the snow.

To shade the hives and prevent the loss of bees, lean a wide board against the front of each one in such a way that the light will be excluded from the entrance.

Cleansing flight in winter.

It is generally supposed that bees wintering on the summer-

stands will be more likely to go through safely, and in better condition if the weather is such that they can have a good flight about once during each month.

I rather the bees would not fly from December 1 to January 20; after that an occasional flight would be a decided benefit. Generally there are several days in February and March when the temperature is sufficiently warm for the bees to fly with safety. I let mine fly when the temperature in the shade is 45° or more above zero, provided there is no wind.

Wintering bees in cellars.

Wintering in a cellar and in repositories has not been a success with me. Yet this is no reason why other people do not succeed. I think I have failed for want of proper ventilation of the cellar. Notwithstanding the fact that it has just been decided that a cellar in which to winter bees needs no ventilation, I am of the opinion that those whose cellars already have ventilators in them will not remove nor close them when the bees are put in. Were I intending to use my cellar again for bees, I certainly should put in ventilating tubes to furnish them all the fresh air needed.

The Production of Comb Honey.

The manager of the *American Apiculturist* invited several well-known beekeepers of great experience to give their methods for managing an apiary for the production of comb honey. We believe he was the first person to advance the idea of the importance and the great advantage it would be to the general beekeeping public in publishing special papers written by beekeepers of experience and those who are in active employment in the apiary each season and by men capable in every sense that that word implies of teaching and instructing the novice and even those who have had many years experience in the apiary how to conduct beekeeping in order to obtain the best results. The first essay on the production of comb honey that appeared in print may be found in the first edition of the Beekeepers' Handy Book, and was written by Geo. W. House, then of Fayetteville, N. Y. The reputation of Mr. House as a beekeeper and honey producer was well known to all.

Let me say in the first place that there will be no trouble in

producing honey in any form in a good season when the flowers are yielding nectar in what we call a good honey season. Therefore what is here said and advised is intended to apply to those seasons when there is plenty of forage for the bees to gather from.

In order to get a crop of honey there must first be a crop of bees. How to produce them at the right time and in the desired quantities is the first thing to be considered.

In the April (1889) issue of the *American Apiculturist*, Mr. G. M. Doolittle of Borodino, N. Y., gave a most excellent method for preparing bees for the harvest. We consider it of so much importance and so valuable to all engaged in the production of honey that it is given here entire.

Preparing for the harvest.

I am keeping bees solely for the profit there is in them, hence shall write this article from a "matter-of-fact" standpoint, as I am sure one week of practical experience is worth years of theorizing. Believing this to be so, I propose to take the reader right into my apiary, as it were, and show him just what I do, thus giving him all the benefit of my experience of working an apiary for profit. Say what we may of pleasure, the most of us find out that there is little pleasure in the ordinary avocations of life, unless there is a cash value attached to them. From this standpoint we will begin.

Taking the bees from the cellar.

First, then, we have the getting our bees out of winter quarters. Nearly all beekeepers in the northern states have been forced to the conclusion that the cellar is the only safe place to winter bees, while of late years the fact prevails, that in order to meet with the best success, the bees should not be set out till settled warm weather arrives, which usually occurs when the soft maple and the elm commence to bloom, from which the first pollen of any account is gathered. If set out earlier the bees waste away in their fruitless attempts to get something where nothing is to be obtained, from which comes "spring dwindling," resulting in a loss of stock.

Now, as to how the setting out is done. I first light my bellows-smoker and proceed with it and a spring wheelbarrow to the cellar door, at which place both are left, when I go in and get one of the colonies and place it on the barrow. As soon as

this is done, I puff a little smoke in at the entrance of the hive, so as to keep the bees from running out and stinging me, which they are sure to do if no precaution is taken, and of all the bees to sting, those which are suddenly awakened from a long winter nap are the worst. Again, all such bees as get out before the hive is placed upon its stand are lost, as they mark their location where they leave the hive and so never find it again, unless it is placed on its former stand, which thing I do not do. Also the smoking causes them to be slower about coming out, so that swarming out and confusion are avoided. As soon as the smoke is puffed into the hive the cellar door is shut so as not to raise the temperature and thus arouse the bees inside, when the hive is wheeled to where it is to stand during the summer, the entrance adjusted and the cover put on. In setting out, they are not all taken out at once, but I set out ten to fifteen in the morning, scattering them well over the yard, and then as many more at night, beginning at about four o'clock. This is to avoid robbing, and also the mixing of the bees. Of course, it is understood that the bees are only set out on pleasant days, with the mercury at fifty degrees or above in the shade. It is supposed by some that when the bees are set from the cellar, each colony must occupy the exact position or stand that it did the summer and fall previous, or else many bees will be lost by going back to their former location.

All who are at all familiar with bees know that the young bee, when it comes out of the hive for the first time, marks its location by turning its head toward the hive upon taking wing, when it commences flying in front of the hive in circles, each circle growing larger as it goes farther from the hive, until it is lost from sight. In this way the exact spot of "home" is located, after which no more precaution needs to be taken by our bee, for it seems to remember ever afterward where home is. For this reason it leaves its hive on all subsequent times in a direct line of flight, never looking at the hive at all, so that if the hive is carried to a new location, the bees do not seem to know it (unless carried a mile or more away); but sally forth only to return to the exact spot where they first marked their home, there to die homeless wanderers. Now, while as a rule this is perfectly true, no matter whether the hive is moved in the night or day time, yet I find that there are two exceptions, one of which is in the case of a swarm, and the other is the first flight in spring.

While the bees always seem to know where their old location was, so that the swarm or bees in the spring can return if they desire to, still a swarm does not so desire except from loss of the queen, nor do bees in spring, if set out in the manner described above. Hence, in setting out, I always place the hive where I wish it to stand, thus avoiding much inconvenience and extra work.

Guarding against robbing—Feeding.

About the first thing which is necessary to know, after getting the bees from the cellar, is that they all have stores sufficient to carry them through till honey becomes sufficient in the field for their support. Because there are a few wild flowers here and there, we must not presume that the bees are getting honey, even if they are flying freely, for the fact proves that, as a rule, scarcely any honey is obtained until fruit bloom opens, except in localities where the golden willow abounds. Hence, we must know that each colony has honey, or loss by starvation is liable to occur. If it were not for robber bees, the best way to ascertain the amount of honey in a hive would be to open it and take out each frame; but as robbing is to be guarded against as much as possible at this season of the year, I simply raise the cover to each hive and blow a little smoke over the top of the frames, which causes the bees to run down from the top of the combs (where the honey is always stored), thus leaving them exposed to view. If much sealed honey is seen, that colony is marked as having enough stores to carry it through. If little sealed honey is seen, the hive is so marked that I know that it needs looking after in a week or so. If none is seen it must be looked after at once. After having gone over each hive as above, I know at a glance all those which need feeding. If I have combs of sealed honey left over from the season previous, I set such combs in these hives, which, by the way, is just the nicest way to feed bees of any I know. If I do not have such combs, or honey on hand, of any kind, I make a feed as follows: Put a gallon of water in any tin vessel and bring it to a boil, when eight pounds of granulated sugar are to be poured in and stirred a little, so it will not settle to the bottom and burn. As soon as it boils again, set from the fire and put in a gill of good vinegar (stirring a little to mix), when the feed is ready for the bees as soon as it is cool enough not to burn them. In feeding, use any

of the many feeders now in use which will get the syrup as near the bees as possible, so that should a cold snap occur they need not starve with plenty of food in the feeder.

How to know that a colony has a good queen.

When settled warm weather comes, it is necessary that each colony contain a prolific queen, for if the queen in any colony should be old and failing, that colony could not be gotten in proper shape to take advantage of the honey harvest. As the queen is the mother of all the bees in the hive, she must be able to lay rapidly so as to increase the population quickly, and if such an one is not in the hive she should be superseded by a better queen. To know what kind of a queen there is in each hive, inspect the combs, and if no eggs or larva are found in the cells, you can reasonably expect that they are queenless, while if the eggs and brood are scattered about in different cells without regularity, the queen is unprolific, so that in either case another queen should be given them. While looking over the colonies at this time, I clip the queen's wings, as swarming is conducted with a safety and ease which are not attained when the queens have their wings. After seeing that each colony has a good queen with clipped wings, the next thing to be done is to prepare for the surplus crop of honey. Do not put this off till the honey harvest arrives, for if this is done, we are often caught by having the best part of the season pass while we are getting ready. Always have the "dish right side up to catch the honey." A few days' neglect at this season will often turn what might be a splendid success into a failure.

Spreading brood, etc.

If you have not already done so, get your surplus arrangement for honey all ready to go on the hive, so that there will be no delay when the bees are getting honey. We must now get the bees fully prepared for the harvest by getting the comb full of eggs in sufficient time for the bees hatching from those eggs to become laborers in the harvest. But how shall we get the eggs laid just when we want them? There are several ways of doing it, but I will give only one here. About May first to fifteenth I commence to do what is known as "spreading the brood," which is simply turning the brood-nest by changing the places of the combs in the hive so that those in the centre of the nest are on the outside, and the outside ones in the centre, which causes the queen to immedi-

ately have more brood in these now centre combs, than was in the others removed from the centre. In a few days a comb that has no brood in it is placed in the centre of the brood-nest by taking it from near the side of the hive, after which the nest is spread apart enough so as to take this empty comb. As soon as this comb is filled, more are added, and so on till the hive is full of young bees, in all stages, so that there will be a multitude of laborers at the right time and double as many as there would have been had the bees been allowed to take their own course. As soon as the hives are thus filled with bees and brood, and honey is coming in from the fields, the surplus arrangement is to be put on, when the bees will immediately take possession of them if all has been done as it should be. In this way the best possible result in honey is secured, far better than by any other plan of which I know.

Mr. Doolittle has told us how to manage the apiary from the time the bees are taken from the cellar to the time the sections should be placed on the hive. Mr. George F. Robbins of Mechanicsburg, Ill., whose writings are read with so much interest by all the readers of the *Apiculturist* will take up the subject where Mr. Doolittle left it and give a method for putting on, removing and getting bees out of sections, also how to care for the honey until it is sent to market. Mr. Robbins says:

When to put on sections.

When the question as to when to put on surplus arrangements comes up for consideration, the conditions attendant upon locality and honey sources must be first noted. Nearly all my honey is obtained from white clover, and the bulk of it is usually gathered in June. I can only write for my locality — let him whose chief source of supply is basswood write for his.

Clover heads may often be seen as early as the fifth of May, and the meadows will be white with blossoms two weeks or more before the honey flow commences. As a rule, clover here blossoms profusely about the twentieth to the twenty-fifth of May, and between the fifth and eighth of June my strongest colonies will commence work in surplus boxes. The first flush of the honey flow arouses the instinct to swarm. It is thus that this instinct can be easiest diverted into a more profitable channel. Then is the time to put on sections. But only those of sufficient

strength are disposed either to swarm or to go to work outside of the brood-clusters, and nothing is ever gained by putting on sections before they reach that point. No matter if they do fill up the cells from which bees are hatching to some extent. When they do go above, the younger bees, which do the work in the sections, will empty these cells, which are not apt to be sealed, and carry the honey up with them. In my climate I find it impossible to get all stocks up to the proper pitch of strength by June 5, but one after another the most of them reach it during the next ten days. I have never known a colony, except a new swarm, to be ready to go above until the bees go to clustering out in front in the heat of the day and not always then. But if you begin with those that come out the heaviest and examine them, we can tell if they are approaching near to the point of readiness. If there is newly sealed honey along the top-bars, and considerable fresh white brace-comb above them, put on the sections. They are never ready before these signs appear and quite extensively too.

Whether new swarms are hived in full or contracted brood-chambers, on combs, foundation or empty frames, I strongly advise putting on surplus arrangements at the start. They will work above and below at the same time and will build less drone-comb below, and the apiarist will get more honey. In case a full brood-chamber is used, a queen-excluder may not be needed; but not having tried it I cannot speak positively on that point.

When to remove sections.

As soon as they are finished. It may be better to have the row of cells around the edge of the section sealed over, but it is by no means necessary.

When wide frames are used and empty ones are added to the sides, as the bees want room, those inside may be finished more thoroughly without becoming more noticeably travel-stained. The same might be said of the middle sections of the upper super when tiering-up is practised. But bees are slow to seal up these outside cells, and I think it better not to wait for this. Whatever you do, *remove your section honey while yet in its virgin whiteness. I want to emphasize that thought emphatically*, if you please. I know it is argued that honey improves in flavor when left on some time to be ripened by the bees; but I have proven the contrary to my satisfaction as I will show far-

ther on. And if the best flavor can be secured at the same time, it is certainly better to take off the honey as soon as possible, for both the cappings and the liquid itself become darker the longer it is left on the hive. It is conceded that, other things being equal, the prettiest honey sells the best.

Never leave unfinished sections on the hive after the clover harvest is over, waiting for a later flow to fill them out. When honey fails gradually, the inside sections will be largely sealed over. But, sometimes, the flow will cease in a day's time. In either case when the time comes that little or nothing is done, it does not pay to leave sections on the hive.

During the long dearth the bees will daub the foundation, the walls of the sections and the edges of unsealed cells with propolis. Such sections are spoiled for ever getting a first-class article of honey. Better take them off and put them back later in case of a honey flow.

To get bees out of sections.

In the midst of the honey season it is most convenient to take off honey while bees are flying. More bees are in the field between nine and twelve o'clock than in any part of the day, and that is the best time to take off sections if other things will permit. When you open the hive, drive the bees down with smoke if your super will allow it. Take off the super or frame and give it a number of quick, jarring shakes; smoke a little and shake again. Lean the super or frames against the hive or put them on top of some neighboring hive. Go to another hive and proceed as before. If conditions are most favorable quite a number can be treated thus, and by the time you get around to the first one the bees will be nearly or quite all gone, and the honey can be carried to the honey-house. If robbers begin to bother —watch—not so much can be taken off at once. In that case I take my plunder to the honey-house door, remove the sections, brush off the bees if any remain, and carry them in. If a few bees get into the honey-house they will seek the window. I simply lower the upper sash and raise the lower for a minute when nearly all will get out.

In case honey has failed, begin quite early in the morning and remove a few supers as directed above. More bees will remain in the boxes of course. The best method then is to carry the honey into the shop, or screen house, if you have one. I take

out the sections, brush off the bees, carry them into the honey-house, darken the window and open the door. By the time the bees begin to be pretty well aroused I quit, and resume operations in the evening or next morning.

The best place to keep honey till sold.

I think that my style of honey-house cannot be excelled for keeping honey until freezing weather. It is the cheapest I could put up to be bee-tight and weather-proof. It is a single-walled room, 12 x 12 feet, and 8 feet high to the eaves, built of eight-inch flooring, covered with two coats of red paint. There is a window in the south side, and with the door shut and the summer's sun pouring in through that window, the heat is *hot* as you may imagine. Into this I carry my honey in supers or on a board, hive covers, etc., and pile it up. At my leisure I pack it away in boxes or empty hives in which to fumigate it and keep it from millers, etc. Here, in this hot, almost air-tight room, honey ripens better than on the hive. Now I know that many prominent beekeepers dispute this. But, after having my attention accidentally called to the matter in former years, in 1887 I made a, to me, convincing test. Nearly all my crop was gathered that year in about ten days in June, the flow stopping pretty abruptly. I immediately took off the most of it, finished and unfinished, and stored it in the honey-house. It certainly had had no time to ripen on the hives. In September, I took off the rest. I wish that opponents of my view could have eaten at my table a few times. All through the winter the difference was perceptible. No matter whether sealed over or not, that taken off early was among the thickest, whitest, richest flavored honey I ever raised or tasted. That taken off later was much thinner and lacked the ravishing flavor of the former.

A caution right here. Leave at least a six inch space between the honey and the wall or floor. That packed within that distance sometimes sours, always becomes watery and rancid.

Prevention of Swarming, and Swarm Controllers.

Most beekeepers would prevent swarming were it possible to do so. But such a thing is one of the impossibilities and is likely to remain so for some time. While natural increase is desira-

ble in some apiaries, it is, as a rule, undesirable with a large majority of beekeepers.

It is as natural for bees to swarm as it is for them to gather honey and store it in the combs. This fact must not be lost sight of when we talk about "breeding out" the propensity to swarm. However, it is an interesting point to discuss as to whether or not in "breeding out" one quality some other quality would not be destroyed at the same time. Certainly, we have a natural law to contend with, and its effects to counteract.

Two questions are suggested here. First, can swarming be prevented? If so, how? Sometimes we see non-swarming hives advertised. The inventors claim that bees kept in them will not swarm. That will prove true in some seasons, and the same may be said of all styles of hives from the nail-cask to the latest bee-hive devised. Yet the fact remains all the same that a non-swarming hive has not been invented by any one, nor is a strain of non-swarming bees likely to put in an appearance just yet, though several parties claim to have them.

Recognizing the fact that the prevention of swarming is beyond the power of man to control, let us consider and discuss the different methods of managing bees when a swarm issues, and how best to handle an apiary at swarming time.

Wing clipping.

It is the practice of many beekeepers to clip off a portion of one of the wings of the queen, intending thereby to prevent the loss of swarms should any issue. Such an operation will, of course, prevent any first swarms from decamping to the woods, but that does not finish the work required to be done when a colony swarms whose queen is clipped. In fact, the labor incident to swarming by that method has just begun. When a swarm issues, the queen, if clipped, will drop to the ground, and if the hive is so arranged that she can crawl back to it she will do so and the bees will soon return. Now, any experienced beekeeper must know that bees require attention again very soon; as another swarm, or rather the same one, will issue the next fair day and will continue to do so unless the old queen is destroyed, or until one of the young queens appear, when a swarm will come off and will be pretty likely to go direct from the apiary to the place the bees had previously selected for a home. There is one way that swarming a second time can be prevented and that is by re-

moving all the queen-cells as soon as the first swarm has issued and introducing a young fertile queen. In some cases this would be a great job. Suppose, for instance, there are a large number of sections on the hive a swarm issues from and the bees working in them. Who would care to look over twenty colonies each day for cells? Another objection to clipping the queens is this: Suppose a swarm issues in the absence of the beekeeper, how is the fact to be known? Should the queen fall to the ground when she comes out, and one of those large, plump toads, such as are found in all gardens at swarming time, gobbles her ladyship, how is the fact of the loss of the queen to be known except by a thorough search of the combs? The same difficulty that would be encountered in destroying queen cells when a colony swarms, would be present in this case. A thorough search of the combs might not reveal the presence of the queen, even though she had returned to the hive. If not found, one would be apt to say, especially if he had received several good stings, "well I guess she is there," and let it go at that. While all this is going on, Mr. Toad, giving a knowing wink, would say, "clip all the queens, I am very fond of that sort of food."

If a colony swarms whose queen is clipped it will be necessary to drop all work and attend to the bees. Then suppose several colonies swarm having queens whose wings have been clipped, what is to be done? Those who practise clipping will say, Why! we so arrange it that all queens can return to the hive; we do no running, and have no trouble about it. Very well; now please tell us how you manage your apiary after the queen and bees have returned in order to prevent any further swarming.

I am opposed to clipping the wings of any queens, as I believe there is a better method for controlling the swarming fever, and for handling bees after a swarm issues.

Reversing to prevent swarming.

Reversing the brood-combs to prevent swarming has been practised to some extent and found impracticable. To prevent and break up the swarming fever it is necessary to reverse the brood-combs as often as once in three days. Such a practice no doubt would so upset the bees (by destroying the queen cells, or the larval queens), that no swarms would issue.

At the time reversing should be practised the bees are working or at least should be working in the sections. Well, now how

would it work to remove two or three sets of sections with millions of bees in them from the hives in a large apiary once in three days for the purpose of preventing swarming? Who would care to do it? Such a method for preventing natural increase is far from practical. I will tell you what *is* practical and thoroughly practical, in the line of reversing.

I will suppose that the combs can be reversed singly or bodily as it can be done with the Bay State Hive. I have found that the proper time to reverse is after a swarm has issued. We will suppose the queen has been secured in a drone-and-queen trap, and while the bees are in the air hunting for the queen, quickly remove the sections and reverse the combs. No smoke will be needed, as there are but few bees in the hive at the time, and what are left are not disposed to sting. By the time the work can be completed the bees will begin to return, and on entering the hive are so astonished at and surprised to find their combs turned wrong side up, that they really suppose they are in a new home and give up all idea of swarming. They accept the situation, and resume work with a will, and ninety-nine colonies thus treated will make no further attempt to swarm.

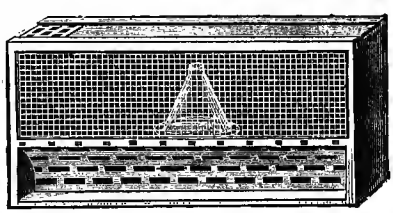
The success of this method depends upon the age of the queen cells. Swarms generally issue on the first favorable day after one or more of the queen-cells are sealed. Now should the swarming be delayed for six or seven days after the queen cells are sealed, reversing would not be a success as the young queens would not be destroyed by such an operation. The point to be gained in reversing is the destruction of the larval queens in the cells just sealed, after which the bees will remove them, and if swarming has not been wholly given up other cells will be started, and another swarm will issue on the fourth day after the first one came off and reversing must be repeated.

Swarm controllers.

I have given the most practical method for preventing swarming. Now I will tell you how to control swarms after or when they issue, and how it is done with the drone-and-queen trap. I know no one should "toot his own horn" as I shall be obliged to do in order to explain and describe the work-

ings of the most wonderful device yet invented and which has now been in use the past five years and has given perfect satisfaction as a swarm controller and for catching and destroying drones. The advantage of this little implement to those who keep bees can only be appreciated by testing them. It is a queen-catcher, and not a *swarm* catcher. That the trap is a success, and will do all that is claimed for it, is well known to those who have read the testimonials published from time to time in the AMERICAN APICULTURIST. Such a thing as failing to catch the queen at swarming time is unknown when the trap is in order, and properly adjusted to the hive.

The trap will catch all, or nearly all, the drones of a colony the first time they attempt to fly out. The illustration will give the reader a good idea of the trap and how it is constructed. The trap is made of thin wood ($\frac{3}{8}$ stuff) and although we have sent twenty thousands of them through the mails during the past five years, only one was damaged. They are well made and will last ten years if properly cared for.



Drone-and-Queen trap.

The cone-shape tube through which the queen and drones pass into the trap, or chamber, after they find they cannot go through the perforations in the metal, may be seen through the wire-cloth at the front.

When a swarm issues, the queen, finding the passage way obstructed by the metal, at once passes through the tube to the chamber above. During the rush at swarming time when the bees begin to tumble out of the hive a few will get into the trap, but quickly find their way out through an opening at the top at the left hand corner. Very few bees go into the trap excepting at the time a swarm issues, or during the first hour after it is placed on the hive.

Destroying drones.

As a rule beekeepers do not know the amount of honey consumed by the tens of thousands useless drones reared in

the apiary. The drone is a consumer and not a producer of honey. I think one drone requires three times as much food for his existence as one worker bee does. More or less drones will be reared in every colony and all the measures taken to prevent it will be futile in most cases. When drones are needed the bees find a way of rearing them. If no drone-comb is to be found in the hive, the bees will cut away the worker-brood-comb, at one corner of the frame and build drone cells therein. If there are any holes in the combs such as the bees usually use for passage-ways from one comb to another, such openings will be utilized for drone-brood. I have known drones to be reared on one side of a comb, while worker-brood was reared on the side opposite, notwithstanding the fact that some writers assert that such a thing never happens.

Drones are required in the apiary most of the time from May 1 to Sept. 20, and in queen-rearing apiaries a month later. One hive containing one thousand drones is sufficient for an apiary of several hundred colonies, although I think it is generally understood that a colony will do better if it has the company of a few drones. I have known colonies to rear so many drones that it required all the worker force of that particular to supply them with food.

There are two periods during the warm months when drones are reared. The first batch from May to the middle of June; the second from August to Sept. 10. Considering that these useless bees are such large consumers of honey, should not some way be devised for the destruction of a portion of their number?

The first year I kept bees I saw the necessity of some device by which many of the drones could be destroyed. I was not long in arranging a trap that was the means of catching over one thousand drones the first day it was placed on a hive.

Although I used a drone-trap for twenty years before the introduction of perforated metal, yet they were not so constructed as to be considered practical or to be adopted by beekeepers generally. The main features of the traps I used were not changed by the addition of the perforated metal. The latter was the thing required to perfect the trap and make it practical for general use.

The trap as a drone-catcher.

When the trap is placed at the entrance of a hive no drones or queens can escape though the worker bees do not have the slightest difficulty in passing the perforations in the metal, while nearly every drone that attempts to leave the hive will be trapped the first day it is set, and a large proportion of all the drones in the colony will be destroyed in the course of three days. The trap may remain on the hive all the season if occasionally cleaned of the drones. The best time to do such work is early in the morning, as no drone, at that time of the day, will attempt to fly. Make a hole in the ground and throw the contents of the trap into it and cover up.

How to manage the trap when a swarm issues.

The trap should be placed on the hives about the time the bees are expected to swarm, or at any time it is desirable to destroy any of the drones. It should be put on in the morning, or at night after the bees are about done work. The bees will be somewhat bothered at the different appearance of the front of the hive by the trap being placed there, but after they have been through the metal two or three times or working through it for an hour there will be little or no trouble. The trap is so constructed that the proper ventilation of the hive is in no wise interfered with. We place them on nearly every hive in the Bay State apiary, and there they remain during the entire season, and though our hives are without any protection from the heat of the sun the bees do not cluster up on the outside to any extent, and there is no other means of ventilation except at the entrance and through the trap.

When a swarm issues the queen will try to pass the metal; but, finding she cannot, will pass through the cone-tube into the chamber, or trap. When once in she cannot return. The bees, of course, are some distance from the stand, flying through the air in search of their queen. Not finding her, they soon return to the hive they went from, but before they have had time to do so, the parent hive should be removed one side, or back a few feet and a new one put on the stand in its place. The bees, being confused on account of having no queen, do not notice the change that has been

made, and rush pell-mell into the new hive; as they do so, the trap is placed near the entrance and the queen is released and at once joins the swarm and the bees have hived themselves. As soon as all the bees have entered, the hive should then be placed on a new stand, and the old stock occupy its former position.

I have known as many as three colonies to cast swarms at the same time and form one cluster and remain so for some time; when discovering that they had no queen, each swarm returned to its respective hive. Swarms will occasionally come out and cluster when the trap is used, but they usually return to the hive in a few minutes, although I remember of one swarm that came out about 11 A. M., and settled upon a limb, and did not return till two o'clock in the afternoon. This was a case where one of the wings of the queen was clipped and no trap was used.

The trap will surely destroy all drones and prevent the loss of any swarms, and greatly aid the beekeeper at swarming time.

Where the trap is used the necessity for climbing from ten to thirty, and sometimes forty feet into a tree for a swarm of bees is obviated, nor is there any necessity for running to the hive the moment a swarm issues. One can rest assured that the bees will not decamp but return to the location they started from.

What to do in case a swarm is returned to the hive.

When a swarm is to be returned to the hive they issue from, some little work is required to prevent another one from coming out the next day. I usually remove all the queen-cells and return the bees without the queen. In the course of three days a young queen is introduced and no further swarming is attempted for the season. This plan will give satisfaction in a majority of cases. I am aware what a job it is to open a full colony and remove all the queen-cells, yet it is necessary to do so if the cells are to be preserved, if swarming is to be delayed or prevented.

Here is another way to manage swarms.

On several occasions when swarms have issued near the close of the honey harvest the queen was taken from the trap

and caged, or destroyed if a new one was to be introduced, and the young queens left to manage the best they could. The usual result is this: A swarm would issue when the last queen left the cell. The queen was left in the trap for a while, or until it was convenient to introduce another. When ready a fertile queen was introduced by the cage system as given in the *Apiculturist* for April, 1889, page 64. The cage was placed in the trap and in a few hours the queen was liberated and passed out of the trap through an opening arranged for the purpose. This device has been attached to the trap since the illustration was made; therefore it is not shown in the cut. It is merely a small hole at the end of the division-board, which is opened and closed by a small nail operated at one end of the trap. The original design of this arrangement was intended for a queen to return from the trap to the hive when a swarm issued.

Hiving swarms where the trap is not used.

When a swarm issues and is left to settle in the natural way, the bees should not be troubled until nearly all have joined the cluster. Then with a good hand force-pump wet the bees so none can take wing. When the water has done dripping from them, take a basket (say one that will hold half a bushel and has no fixed handle), place it directly under the cluster and with a sudden upward blow of the hand dislodge the bees and nearly all will fall into the basket. If any fly they will follow those in the basket if you do not descend too rapidly.

Place the hive on the ground outside of the limbs of the tree so that the bees that take wing can find it. As soon as the bees have entered, or are clinging to the hive, remove it to the stand it is to occupy.

Dividing swarms when two or more issue and light in one cluster.

When two or more swarms issue and settle on the same limb as they often will do in large apiaries, they should be treated to a thorough drenching of cold water. After having prepared two hives for their reception, place them on blankets or cloths of some kind several feet apart, shake the bees into a basket and then turn them upon the blankets in front of the hives dividing them as nearly equal as possible. As they

run towards the hive look sharp for the queens. By placing a drone-trap at the entrance of each hive there would be less trouble in finding the queens. When found give one to each lot of bees. Do not touch the queens with the hands, or with anything that would be likely to give them a foreign smell, as they would most likely be killed. No smoke is usually needed for such an operation, yet it is always best to be well prepared for the unexpected, therefore the smoker should be at hand in case it is needed. In this case a little smoke would prevent the bees injuring the queens.

When the queens have been found, the traps should be removed, and as soon as the bees have entered the hive remove them to a stand and no further trouble will ensue.

Artificial increase of the apiary.

Twenty years ago this subject was considered a most important one, but now most beekeepers have all the information on this point that is really necessary. This reminds me of a little conversation I happened to hear one day. About the time mowing machines were first introduced, we had one of those wet seasons, in fact, it was so wet that nearly all the hay crop hereabouts was ruined. An old farmer happened along and of course he growled about so much rain. All people find fault who have to depend upon the weather for a part, or all of their living, such as beekeepers, for instance. Well, says a man to the old farmer, "Why don't you buy a mowing machine?" "*Mowing machine*," says the farmer, "I will buy a *drying machine* if I can find one." Well, this is about the fix that most beekeepers of the present day are in. What is wanted is not a knowledge as to how to increase their apiary, but how to prevent swarming and increase.

Notwithstanding this fact, there are many beekeepers who would like to increase their apiaries. Considering this and appreciating the fact also, that the best way to enlarge the apiary is by artificial increase, I will give a plan for forming new colonies. I will not say that it is the best method and will not claim that this method is applicable to all localities, yet, here in New England, it works well.

About Aug. 1, 1888, or about three weeks after the close of

the honey harvest, I divided six colonies of bees in the following manner: The bees were in eight-frame hives. As near as I could do so, I took one-half of the combs, bees, brood and honey and placed them in an empty hive and then filled the balance of the brood-chamber with frames of foundation. After locating the queen in one of the hives, it was moved about ten feet to a new location, and at the same time a queen was introduced by the cage method to the other colony or other half of the original stock. The covers were then placed on and the bees left alone for several weeks. On opening the hives one day, I found the foundation well drawn out, brood in all the combs and the new queens successfully introduced, but no stores. Those colonies did not gather an ounce of honey after they were divided. Wet weather set in Sept. 1 and ruined the fall crop. The result was that every colony had to be fed nearly all their winter stores.

I should have said that the frames of foundation were placed in between each two combs of brood so far as it could be done.

How to manage an apiary when one has all the colonies needed.

I cannot say from experience just what I would do in case my apiary had reached that number of colonies that further increase would be undesirable, as I have never been in just those circumstances. However, the things that the beekeeper might desire in the line of increase would be beyond his power to control, as the bees would continue to swarm the same as usual. Now, rather than purchase new hives, I think it a better plan to double-up, putting two and even three swarms in one hive. Why not? There can be no objection to such a practice and the advantages by so doing are many.

If increase of comb honey is the object, what better method for securing it could be adopted? If one colony issues hive it; if one or two more come out the same day, put them in with the first swarm. Then pile on the sections and give the bees a chance; one, two and even three cases of sections, if there are bees enough to work in so many.

In a large apiary there will be, or there generally are, more or less colonies whose queens during the season have become worthless on account of old age, and other colonies that have lost their queens. In order to keep the apiary down to a cer-

tain number, those colonies that failed to be profitable should be destroyed and the hives and combs packed away for use another season. I believe that the above plan is a practical one in any location.

Fastening foundation in frames and sections.

It requires tact, experience, good judgment and a convenient place, as well as the proper appliances for doing good work at fastening foundation in frames or sections.

While some beekeepers have used hot beeswax for fastening foundation in brood-frames, I have not made it a success. When thus fastened it is pretty likely to break away at the top during a hot day when the bees commence to work upon it. I have used melted beeswax and rosin to some extent and had less trouble about the foundation breaking down. That way for doing such work is too slow and requires more time than I can devote to it.

I find there are, at least, two better methods than the beeswax plan for fastening foundation in frames. The first one is as follows: Have a piece of board not quite as large as the inside of the frame and same thickness as the top-bar; nail this board to the bench, say about three inches on from the edge, so as to leave room for the frame to rest. Invert the frame and let the top-bar rest against the edge of board. Have the sheets of foundation cut half an inch shorter the longest way than the inside of the frame, as it should not touch the end-bars of the frame except at the top. Lay the foundation on the board and let it enter the frame about a quarter of an inch beyond the centre. Have at hand some thin strips of wood, say one-fourth of an inch wide and not over an eighth of an inch thick and as long as the foundation. Place one of these strips on the foundation and drive some small nails through it into the top-bar. Reverse the frame and run the ball of the thumb (after wetting it with spittle) along the edge of the foundation at the top to press it to the centre of the frame. Now, to get the foundation so that it will be flat and smooth, have a board same size of inside of the frame, and three-eighths of an inch thick; lay it on the bench and place the frame of foundation over it. Then use the hands or a piece of board to flatten and press the foundation into shape. The room must be quite warm, say 90°, and then the

wax may be worked easily. As the frames are prepared, hang them in a hive and they may soon be used.

Another way to fasten foundation in frames is to make a saw kerf nearly the whole length in the top-bar and wide enough to let the heaviest foundation in. Fasten it in by driving nails through the edge of the bar.

Should the foundation hang out at the bottom corners, wire nails should be driven in the frame to keep it in place; the nail should be removed when the comb is built.

Fastening foundation in sections.

There are several ways for fastening starters in sections. Of all the methods that we have tested for doing this work, I have found none so good and none so practical as the one I shall describe here. While it is the best plan to fill the section nearly full of foundation, it will do nearly as well to put a small V-shaped piece in. Cut the foundation so it will come down to within half an inch of the bottom of the section and let the top be nearly as wide as the inside of the section. When put in in this shape, the labor and time required to do the work are much less.

In order to get every piece the same size, I make a wooden pattern to cut them by. I have at hand an iron vessel large enough to hold one quart. In this is placed equal parts of beeswax and rosin which are melted over the blaze of a kerosene stove. When the mixture begins to smoke a little, it is ready for use and the wick is turned down and raised again when the wax begins to grow cool. Should the mixture get too cool, the foundation would not stay in place and if too hot it would melt the foundation too much when dipped into it. One will soon learn the proper temperature that works best.

When all is ready, the sections are piled on a bench or table and the work of placing the foundation in the section is begun. I can put them in as fast as a good, smart hand can pick them up and pack them away. The sections are packed away and in the same position they are to occupy on the hive. I like to do all the above work in a pretty warm room. Then, if the foundation leans a little to one side, it will gradually settle into the proper position; even if it should

not do so then, it will after it has been on the hive a few hours.

There, my friends, you can adopt the above method for such work, or any other you choose, and I shall be satisfied. We have used the above plan and speak from long experience. Long before the introduction of comb foundation, we used melted beeswax and rosin for fastening small pieces of comb in surplus boxes and for fastening comb starters in brood-frames.

Doubtless many who have kept bees for only a few years will find a better way for doing some things than the experienced beekeeper has any knowledge of.

Bee-hives.

The reader will expect us to say something about bee-hives. I hardly know what to say upon a subject of such great interest to all who keep bees. It will not do for me to praise any particular style of hive as a good many beekeepers would feel hurt. Most any of the hives now in use are good enough to keep bees in and when properly managed bee-culture will be made successful. All the late styles of hives combine the best and most important features that are necessary in a good hive. It should be understood by the reader that no one hive can be constructed to combine all the desirable features, and in accordance with the ideas of every beekeeper. I know of no better way for one to decide for himself as to the hive he wants than to purchase one of the well-known movable-frame hives, and use it one or two years and study the principle of that hive and at the same time thoroughly post himself by reading up the hive question. This can be done by subscribing for the several bee-papers published in this country. There is no subject connected with bee-culture that has been so thoroughly treated in the bee-publications as the hive question.

A hive that would prove successful in the hands of some skilful beekeeper might prove a failure in the hands of the novice.

A good hive should combine the following important features:

1. It should have movable frames and so constructed that the bees will not build brace-combs between and over the top-bars.

2. The brood-chamber should not be so large that there would be room for the bees to work and build combs between the end of the frames and the end of the hive. A space of $\frac{1}{4}$ inch is all the room that is necessary for drawing the frames without killing any bees. The same rule must be applied to the space between the top-bars and the honey-board, or whatever is used over the frames. If a space of over $\frac{1}{4}$ inch is allowed over the frames the bees will fill it with comb and honey. When this is the case it will require a heavy instrument to raise a section-case, or to remove the honey-board and as all such operations irritate the bees the operator will be likely to get badly stung. Three-sixteenths of an inch over the frames is as much space as is necessary to let a bee pass.

3. The frames should not reach within half an inch of the bottom of the hive. There is no danger of the bees building the comb down through the bottom-bars unless there is an inch or more space under them. A large amount of room is needed under the frames for the health of the bees, and for the proper ventilation of the hive. Bees will winter better, the combs mould less and more honey will be stored in the sections in hives that have a good bee-space under the frames. Why? for the reason that the hive will be well ventilated. Good ventilation in a hot day will keep the interior so comfortable that the bees will not be forced to desert the sections and cluster upon the outside of the hive. It also aids the bees to ripen the new honey better and more quickly.

4. The entrance to the hive should be not less than ten inches long and half an inch high. With the entrance blocks described on another page the size of the entrance is easily and quickly enlarged or contracted. Take a block of wood at least seven-eighths of an inch thick and four inches long and about three inches wide, saw it in two from opposite corners. By placing the blocks in different positions, the entrance may be made to admit only one bee at a time, or enlarged to several inches in width.

5. All hives should be arranged and adapted to tiering the sections. It is much the best plan to tier the sections

above the frames than it is to place them at the sides of the brood-chamber.

6. For many years the brood-chamber of most hives have been made large enough to take ten frames side by side, but eight-frame hives are coming into favor, experience having demonstrated their superiority over larger hives. The ten-frame hive should be fourteen and one-fourth inches wide inside and the eight-frame hive but twelve inches wide.

7. Bee-hives should not be made of thick boards. They are too heavy to handle, cost too much and are no better in any way than hives made of boards three-eighths of an inch thick. The thin boards must be kept well painted to be durable.

8. If bees are to be wintered upon the summer-stand they should have double-walls. A space, of two inches at least, should be allowed between the walls of the outer and inner hive. This may be filled with chaff or other warm material in winter. With me bees winter best without any packing except over the frames.

Having stated some of the principal points that a good hive should possess, I will now describe several of those in use.

Dr. Tinker's hive.

The Nonpareil Bee Hive devised by Dr. G. L. Tinker of New Philadelphia, Ohio, is a hive of recent introduction and may be described as follows:—The bottom is not attached to the brood-chamber and is composed of a framework $2\frac{1}{2}$ inches framework $2\frac{1}{2}$ inches wide rabbeted at the top edges to receive a thin ($\frac{1}{4}$ inch) board or boards, the entrance being so formed as to open beneath the brood frames.

The brood-chamber is made to storify, and is $7\frac{3}{8}$ inches deep, by $11\frac{1}{4}$ inches wide by $17\frac{5}{8}$ long inside measure. The sides are $\frac{5}{8}$ and the ends $\frac{3}{4}$ of an inch thick.

The brood-frames are 7×17 inches outside measure and the top-bar is one inch wide, $\frac{3}{8}$ thick and $18\frac{3}{8}$ inches long. These frames are supported on metal rabbets like any Langstroth frame.

The honey-board is made queen-excluding by the use of strips of perforated zinc $\frac{3}{4}$ of an inch wide. The wood slats are plump $\frac{7}{8}$ of an inch wide by $\frac{3}{16}$ thick and in the adjoining edges are made thin saw kerfs into which the zinc strips are

inserted. The wood slats are set in a suitable framework so as to be alternate with the eight brood-frames used in the brood-chamber. The strips of zinc have two rows of perforations and are let into the saw kerfs so that the perforations come within $\frac{1}{32}$ of an inch of the wood, affording a ready foothold for the bees to pass through. This honey-board is the original invention of Dr. G. L. Tinker, who decided to make it a gift to beekeepers, and it is now public property. As

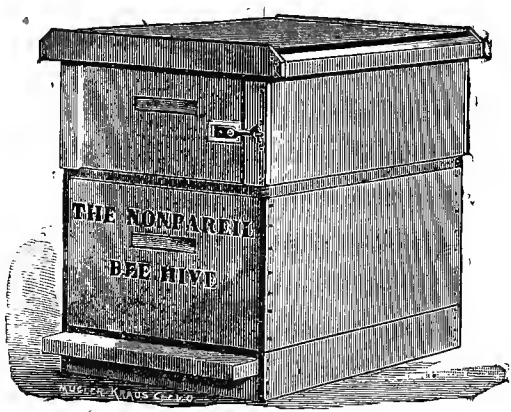


FIG. 3. *The Nonpareil bee-hive.*

an invention it is second to none of the valuable agents now considered indispensable to successful apiculture.

The section super is composed of a framework or case with removable side held in place by adjustable hooks. The case supports six wide frames each holding four sections. The top and bottom bars of the frames are only $\frac{3}{16}$ of an inch thick and are prevented from sagging by a centre bar. Wood separators having three perforations are used between the frames and sections. The latter are made with open sides. There are twelve openings into each section affording the most perfect ventilation of the super and hence rapid ripening of the honey. The size used is $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{7}{8}$, and holds exactly one pound. The cover is double and lined with roofing tin on top

and is good for an indefinite service if painted once in three years.

The extracting super used is identical in all respects with

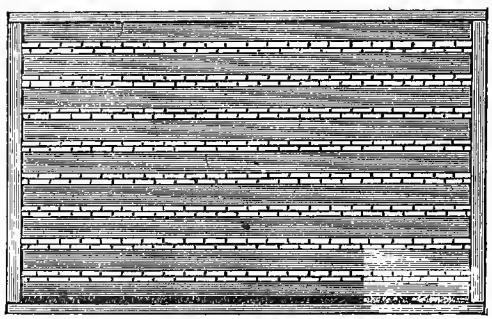


FIG. 4. *Dr. Tinker's honey-board.*

the brood-chamber and may be storified, as also the section super, to any extent desired.

Section-cases.

Section-cases or holders are among the new things in apiculture. The styles are not in such great variety as in hives, but in the course of a few years there will be as much confusion in that line as there is in the countless styles of different hives.

We shall take the space here to describe but two kinds of section holders. The one here illustrated was devised by Frank A. Eaton of Bluffton, Ohio.

The accompanying cut, fig. 5, represents the case; it has the combined features of the single-tier broad-frames and the open case, having a slatted bottom to correspond with the bottom of the sections which protects the latter and keeps them clean from brace-combs and coming off the hive as clean as when first put on. It can be used in connection with a wood-and-zinc honey-board if desired, as other cases are, or it can be used to good advantage without, as the slatted bottom keeps the sections clean. It can be made with the bee-space

at the top or bottom, as desired; with a hive where the brood-frames come flush with the top of the hive, the bee-space should be at the bottom of the section-case. The sections set compact, thereby admitting of the use of sections with bee-space openings on all four sides where such sections are used. It can be used with or without separators without a particle of change;

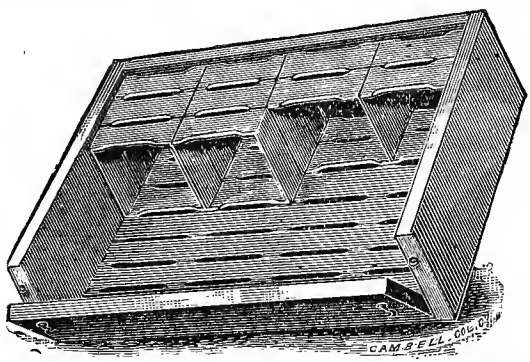


FIG. 5. *Eaton's section-case.*

this is one of its novel features. When put together it is solid and substantial; is all in one piece, there being no loose T rests or parts to get misplaced, but is always ready for use.

It has a movable or hinged side ingeniously arranged, admitting of the easy removing of the sections without reversing and driving them out, as that practice often breaks the comb from the section; any particular section can be removed with ease.

It is so arranged as to fill out in length the regular L. frame hive and in tiering-up it forms a part of the hive, the cover of the hive raising as fast as tiered-up; the case being a protection to the sections against weather, the same as the hive protects the brood-frames.

This case has been thoroughly tested by many of our best honey-producers and pronounced a superior case.

The Bay State section case.

This case has been in use four seasons, and we have yet to learn one instance where it has not given satisfaction. A brief description may not be out of place.

The Bay State section-holder is composed of six broad

frames, each holding four one-pound sections. Wood-separators are placed between each two frames. The separators can be discarded if one desires to so use the case. Of course, the honey would not be stored in the sections in a very desirable or a salable form. I believe it cannot be done without the use of separators. Not only is it necessary to use such things in order to have the combs built within the sections, but it is equally important to have the combs attached solidly on all sides of the section. Here, in some parts of New England, we are obliged to reverse the sections if the comb is to fill the box without leaving the "pop-holes." The Bay State section-holder is reversible; not one broad-frame at a time, but the entire set of six broad-frames of twenty-four sections can be reversed bodily and in less time than it takes to describe it.

The broad-frames are so constructed that the bees cannot soil the sections to any great extent.

The outside frames and sections are protected by pieces which serve as clamps through which an iron rod is run, having thumb-nuts at each end, thus clamping the entire case solidly and firmly.

When the sections are full, all can be removed at once and not by one section at a time as has to be done with some cases. When the middle frame of sections is filled, the rod may be drawn out, the frame removed and another put in in its place. All this can be done with the least trouble and inconvenience.

For tiering, I believe the Bay State reversible section-case is unequalled. It matters not how high the cases are tiered, the passage way is continuous from the brood-chamber to the upper case.

Sections.

In the matter of sections I believe the one-piece one-pound section will, if it has not already done so, drive all other kinds from the market. A few old style beekeepers still stick to the four-piece sections, yet their number is so few that the fact is hardly worth mentioning.

Contracting the brood-chamber to secure more honey in sections.

Some prominent beekeepers strongly recommend contracting the brood-chamber when working for comb honey. The reasons given are that the smaller the brood-nest the more

bees will be forced to go into the sections to work; and as the storage room is all above, the bees must necessarily place the surplus honey in the sections. This is pretty good reasoning and is a method that we find works well. Yet, I am of the opinion that there is such a thing as going too far in the line of contraction.

I think it is as well to make the brood-chamber as small as it should be and at the same time furnish room for the accommodation of the bees, so far as is necessary for rearing brood and storing a sufficient amount of honey for the winter's supply of food. On this point, Dr. G. L. Tinker and myself reached the same conclusions unbeknown to each other and at about the same time. I do not believe in fussing with the brood-chamber at all. Space will not allow me to give my objections to the useless meddling with the bees. I am sure I can produce more honey in the sections by my method than it is possible to obtain by any system of contraction. The brood-chamber that gives me the best results has eight frames 17½ inches wide and 7½ inches deep. This is inside measure. With a brood-nest containing only that number of cubic inches, there is no special need of contraction.

Tiering sections.

Tiering is now practised by all successful honey producers. The old-fashioned method of placing boxes or sections in or at the side of the brood-nest is one of the things of the past; while the better plan of tiering above the brood-chamber has taken the place of all other methods. The reversible section case is peculiarly adapted to the tiering system and was devised with that end in view. The passage way from the bottom of the frames is continuous to the farthest section on the hive. We have had as many as four cases, one piled above the other on a hive at one time and the bees filled all before any were removed. When one case is nearly full, raise and reverse it and place another under, and so on until there are not over four cases on the hive.

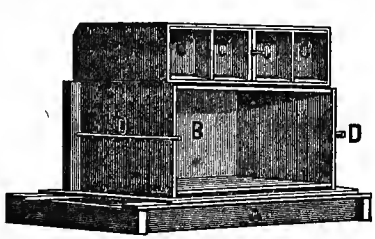


FIG. 6. *Section-case and brood-chamber.*

Brood in the sections.

By our system of management for securing comb honey together with the section case above described, the queen has never deposited an egg even in one section, and we never have used any sort of a honey-board on the Bay State hive. Fig. 6 gives a good illustration of the section case and the manner in which it is placed on the hive.

When to reverse and when to add another set of sections to the hive.

As stated above, the sections should be reversed when the honey in the middle sections is about one-third capped. Just at reversing time is when another case of sections should be placed on the hive. The partly filled set of sections are removed, the empty set put on and then the case, partly filled, is reversed and placed upon the empty case.

There are more bees in an ordinary colony than can work to advantage in one case of twenty-four sections when it is half filled. Hence the necessity of giving the bees additional storage room.

There are advantages of leaving the sections on the hive after they have been filled. One of them is this: If the honey is left on the hive several weeks after it is stored, it is much better ripened and the quality much improved. On the other hand the longer the honey is left on, the darker the capping becomes and the marketable value is correspondingly decreased. Those who take honey to market (or as for that matter any other goods) know that the eye must be suited as well as the taste. This ought not to be, yet it is so the world over. The man who takes fruit or vegetables to market must put the finest specimens on top or a hard sale will be the result. The old Quaker said, "Put the best on top as that is the place where buyers expect to find it."

That is true and no doubt many of the readers of this have found it so. In crating honey put the best where it will meet the eye first and then the purchaser will get a good impression of your goods to start with. When you have done that, then continue to put just as good honey in other parts of the crate and the purchaser will not only get a good impression of the honey, but of the person who produced and sold it, and your reputation as a square-dealing person will be established at least to the extent of your sales.

I am prompted to make the foregoing remarks on account of a little personal experience I had in purchasing some honey from a man in whom I placed too much confidence. I bought a fine looking lot of honey and had it shipped to me from Syracuse to Boston. It was put up in nice clean crates; as is the custom the best sections were at the sides and in plain sight. Yet I was sold. When on opening the crates in Boston there was not one of them that had not been "doctored." To the credit of the shipper be it said he on demand made the damage good.

The sections:—how many sides open.

The width or style of the section has but little to do with the sale of the honey in them. It is still a question which is the better, a section open on two sides, or those open on four sides. So far as my experience has been, I am inclined to think the sections open on four sides are much the better, so far as getting honey stored in them.

In placing the starters in the open-side sections no mistake can be made in getting the foundation on the wrong side of the box. The section is always right side up.

This advantage will be appreciated when a fellow is in a hurry to put starters in, or in placing sections in a case.

Other styles of sections.

One-piece sections have not come into general use, though they are destined so to do at no distant period. So far as I am concerned I rather pay ten dollars per thousand for the one-piece style than have the four-piece sections given me.

I can put up half-a-dozen one-piece sections in the same time it takes to put up one four-piece section. Then, again, when the one-piece section is put up it keeps its position and may be handled in the roughest manner. We use no glue to keep the section in its proper position.

There is so much competition in the section-manufacturing business that those who offer them for sale seem to vie with each other to see who can get out the nicest section and command the largest share of the business. So great is the competition that each manufacturer has been obliged to introduce the most improved machinery in order to hold his trade. We have some sections in stock that are as near perfect as it is possible to attain. They are open on four sides, planed on

two, and when folded the V-groove joint is as smooth as anything can be. Every section stands up plumb and square. The dovetail joints are so perfect that none split or crack when driven together and yet they go together so nicely that none slip out and not one section will start at the joint when they are handled.

Disposing Honey.

Where to find a market.

As these remarks are not intended for the experienced beekeeper or those engaged largely in the production of honey and send it to market by the carload, nothing will be said about crating, assorting, etc. Most beekeepers of any experience know all about that part of bee culture. The most important matter, and one that interests the average beekeeper, or those who run a small apiary for amusement and profit, when such a thing is possible, are the ones who desire to find a quick sale for the products of the apiary. The beekeeper who lives near a large town can easily dispose of quite a quantity of honey. Most all the grocerymen will purchase more or less honey and they manage to dispose of it at a profit. Sell only a good quality of honey. Use that which is inferior for vinegar. Put your name on every package you dispose of, and then if the honey is satisfactory your reputation will be established.

Where to keep the honey when taken from the hive.

I believe it is now generally understood that a dry, warm room is the most suitable place in which to store honey after it is taken from the hive. If one has several hundred pounds, a room specially fitted for storing it is a necessity. Honey must be kept out of the reach of flies and other insects, and where no dust or dirt is to be found.

Queen-rearing.

Some one calls for a simple method for rearing queens. There is no method for rearing queens that can be called simple. Yet there is nothing about it that should come under the head of scientific. True, one must have a good knowl-

edge of bee culture in order to carry on queen-rearing successfully. If any plan for rearing queens properly comes under the head of simplicity, it is the one given on the following pages and by which queens are reared by no other than in a strictly natural way.

However, I will give a way for rearing queens by which one can produce good queens, and perhaps is as easy a method for the inexperienced to practise as any yet published.

A few days before you desire to start queen cells, insert a clean new comb (say one that has been used two or three times for brood) in the centre of the brood-nest of the colony from whose queen you desire to rear queens. On the fourth day after, remove the queen from the colony in which the cells are to be built. Within twenty-four hours, take the frame from the hive in which it was placed for eggs. With a thin, warm knife cut some pieces from the centre of the comb two inches long by half an inch wide just where the eggs have begun to hatch. By making three or four such apertures, about a dozen queen cells will be made. Now remove one of the middle combs from the hive in which the queen had been taken and place the comb of eggs in its place. In eight days remove the comb on which the cells are built and examine the other combs for cells. If any are found destroy them and introduce a queen.

With the bees adhering to the frame of cells, and two combs of honey, a nucleus for the protection of the cells may be formed. By confining the bees to the hive a day or two, they will not desert the cells if released in the apiary from which they were taken. On the eleventh day after the cells were started they should be transferred to other hives or placed in the nursery.

Space will not allow us to give in full all the details connected with queen-rearing. For full particulars for rearing queens, the reader is invited to read the *American Apiculturist* beginning with the November, 1888, issue. There will be found the latest and most complete methods for rearing queens.

Rearing queens in full colonies without depriving the bees of their queen.

Rearing queens in full colonies while a fertile queen has the full

liberty of the combs and entire freedom of the brood-nest must be considered among the new things connected with bee culture.

I will not claim that the idea of rearing queens in full colonies without first removing the reigning queen is wholly original with me, yet I shall claim the credit of being the first person to make such an undertaking a success.

I think several well-known beekeepers have made an attempt to rear queens while the laying queen was in the hive. In some cases the queen was caged, but the queens reared in that way have proved worthless in my apiary.

I hardly think there can be found one person among all those engaged in or who are interested in bee culture who has experimented in this direction to the extent that the writer has in order to discover some method by which queens can be reared without depriving a colony of its queen. Even now I feel bound to acknowledge the fact that the present method was more the result of an accident than of any well directed experiment which I had tested.

The swarming impulse, or the condition under which bees are induced to construct queen-cells.

All who have had any extended experience in beekeeping well know that bees will not make preparations to swarm except under certain conditions. What are these conditions? Perhaps this method will be better understood if I explain those conditions that must be present to cause a colony of bees to construct queen-cells and to make every preparation to emigrate. These conditions are: 1. A good prolific queen. 2. The combs full of brood in all stages. 3. Plenty of forage. All these things induce activity in any healthy colony of bees. Perhaps the word excitement will better express the real condition of a colony when in a proper condition to cast a swarm, or the condition that will cause bees to construct queen-cells.

Now let us suppose that it is as late in the season as July 20. We will also suppose that the honey harvest is past and that the bees have nothing to do but to consume the honey already stored in the combs. Now if one would like to know how to create an excitement in the apiary, just place a small quantity of honey within a few rods of the hives and you will not have long to wait to know that there is not a colony in the yard that is not ready for business of some kind. This one fact merely illus-

trates what an easy matter it is to excite the bees at any time. They are as ready to rear queens as they are to collect honey. All they need is to be encouraged.

Now let us suppose that the combs are full of brood and that there are thousands of young bees in the strongest colonies. It is an easy matter to put those bees in a condition to swarm. As there is no natural forage for them to gather, something artificial must be prepared instead. The best food or stimulant for such a purpose is water, sugar and honey. Take two quarts of best granulated sugar, one quart of water and one quart of honey. Heat the water to the boiling point and dissolve the sugar in it, and then add the honey. When cooled down to a temperature of about 75° or 80° feed it to the strongest colony in the apiary. Use about two quarts the first day and one pint in the morning and another pint at night for about three more days.

Now if ten strong colonies be thus treated, nine of them will be ready to rear queens. Should the combs be examined, cell-cups (the foundation for queen-cells), each containing an egg, would be found in nearly every hive. These cell-cups are usually found on the edges and at the bottom of the combs. While the presence of the cell-cups would indicate the readiness of the bees to rear queens, or rather, their readiness to construct queen-cells, not one colony in ten would rear any queens unless the supply of food was kept up, nor would all the colonies even then finish and seal the cells unless the cells had been started in some other colony and worked on, at least fifteen hours.

Certain conditions must always be present in any operation about bees if one is to be successful. Well, now to make cell-building a success by this method the bees must have the combs and eggs prepared for them the same as they should be if the queens were to be reared in queenless colonies, yet the eggs must not be placed in the hive at once, but given to a queenless colony and in the course of twenty-four hours give the cell-cups to the colonies having laying queens that are to finish them. This is our method for providing cell-cups for the bees.

How to start the cell-cups.

To start the cell-cups, it is necessary occasionally to deprive a colony of its queen. Now, let me say that one strong colony when first made queenless and treated as stated in the method for

rearing queens as given in the "Beekeepers' Handy Book," will start 10,000 queen-cells if as many eggs can be prepared and given them. I will guarantee that to every egg about ready to hatch when placed in the hive there will be a cell-cup started. When I have a lot of eggs from a choice queen in the right condition to start cells from, and the weather or other circumstances are such that I cannot prepare the proper number of colonies for cell-building, the eggs and combs are prepared and placed in a queenless colony. The next day, if convenient, I prepare as many colonies as are needed for the number of cells to be started and the cell-cups are divided among them. In this way much valuable time is saved.

An old queen necessary.

Another condition that is absolutely necessary in order to rear queens by this method is that the colony must have a queen at least *one year old. It would be impossible to rear queens by this process in a colony having a prolific, young queen.* Don't attempt it. If the reader is well posted in bee culture he is not ignorant of the fact that colonies having young queens, as a rule, do not swarm. (These remarks do not apply to second swarms.) Queens are usually one year old before any swarms issue. Here is a hint which the experienced beekeeper will stop to consider, as it is the key to this method of queen-rearing. When a queen has lived two years and worked to her extreme egg-producing capacity, she has seen her best days and will soon be superseded by the bees. Upon this knowledge I based and conducted experiments for the purpose of discovering some practical method for rearing queens in a colony in which there is a fertile queen.

I think every one who takes an interest in bee culture will appreciate the advantages of this method for producing queens over all others yet advanced.

To read many of the descriptions of some of the operations performed in the apiary, one gets an idea that they must be fussy jobs; no doubt this method seems to be a fussy one to conduct, yet it is not. Of all the methods for rearing queens, I believe this one involves the least labor and time.

Rearing queens in full colonies during the honey harvest.

I have now explained the prime conditions that must always

be present if queen-rearing is to be practised and made successful without removing the queen from a colony of bees.

So far as described, the plan relates to rearing queens after the honey harvest has passed. To rear queens by the foregoing plan during the honey flow requires quite a different treatment.

As soon as the best colonies begin to gather honey they are usually seized with the swarming impulse and at once begin to construct queen-cells and make every preparation to swarm. When a colony is in that condition, the bees are ready to rear queens from the eggs, or larva prepared as above and placed in the brood-nest. While a few cells will be made on the other combs, the bees will rear a queen from every cell-cup prepared and placed in the hive. Now without waiting for the bees to start the queen cells, prepare the eggs for them according to the directions given farther on, and the result will be a fine lot of cells.

Just before dark of the fourth day after the cell-cups are placed in the hive, remove and place them in a queenless colony, and insert a new lot of cell-cups in the cell-building colony. Continue to do this as long as the bees can be induced to rear queens.

Should a colony cast a swarm it will be necessary to open the hive and destroy or remove the queen-cells that are built on the other combs, and then return the bees and the queen with them to the hive from which the swarm issued and at the same time give them a new lot of cell-cups prepared as the first ones were.

After the honey-harvest is over no cells will be built except from the cell-cups placed in the hive. During the honey flow a swarm is pretty sure to issue as soon as one cell is sealed. To prevent it, the cells must be removed as soon as possible after they are sealed. The exact time when they will be sealed may be known to an hour. That will be on the eighth day after the egg was deposited in the cell, that is, if the eggs were used the fourth day after the queen laid them. Bear this in mind and it will save much time and trouble.

When the cells are removed from the hive the comb and adhering bees should be taken with them and all placed in a queenless colony. If any of the cells are not sealed, there will be enough young bees taken with them to finish them.

If a nucleus is formed it should consist of three standard frames containing plenty of stores; and if closed, it should be well supplied with water for nursing the unsealed brood.

Forming nucleus colonies.

Let me say here that a nucleus colony may be formed of bees taken at once from a colony having a fertile queen, and the cells sealed or unsealed at once placed in the hive. If eggs, instead of queen-cells nearly ready to cap, were given bees under the same condition, nearly all of them would be destroyed. (How to form nucleus colonies is described in the March, 1889, issue of the AMERICAN APICULTURIST.)

Several colonies in the Bay State Apiary, in 1888, built from fifty to one hundred queen cells each, and the queen had the free use of the comb the entire season. In fact, I paid no attention to the queen, at any time. When one set of cells were sealed or nearly so, the *comb* on which they were built was removed and another lot of cell-cups inserted. There is no trouble in keeping the bees at work at cell-building as long as the supply of food is kept up and the cell-cups are furnished them.

When the combs are filled with syrup extract it, and after adding a small quantity of water, feed it back to the bees again. Now if this method for rearing queens will work as well in other apiaries as it has in the Bay State Apiary, why try to rear queens by any other method? Is there a method for rearing queens that seems so practical or one that comes so near nature?

Preparing the combs and eggs for cell-building.

The combs and eggs for the queen-cells are prepared for this method exactly the same as they are in the other plan heretofore published by me. As a large number of those who will read this work have never seen a copy of the "Beekeepers' Handy Book," I will give my plan for preparing the comb and eggs for cell-building. It is as follows:

When ready to set the bees to building cells, one of the combs containing plenty of eggs at the proper age for starting queen-cells should be removed from the hive in which the breeding queen is kept, and taken to a warm room previously prepared for quickly doing the necessary work. There should be at hand an oil stove, and an iron-pan, say one that is twelve inches long, six inches wide and not less than three inches deep, in which should be a quantity of beeswax and rosin sufficiently heated, to have the material mix well.

An old table-knife, one having a very thin blade and made

quite sharp is one of the most convenient and handy tools that I have in the apiary. This is used for cutting foundation or comb of any kind. A knife for such a purpose will work nicely if warmed.

A quantity of hot water should be at hand to dip the knife in occasionally. When not convenient to have the water, the knife may be warmed by the blaze of a kerosene lamp.

Selecting the eggs for the cells.

Now we are ready to cut the comb from the frame. Bear in mind that the last eggs deposited by the queen are those near the edge of the comb, and in order not to take such, those eggs are selected nearest the centre of the patch of unhatched eggs. I mean by this, that should a queen be allowed to fill one comb with eggs, those deposited in the centre of the comb will be the first eggs to hatch and those are the ones to select for queen-cells.

If queen-rearing is to be done upon a large scale, it is much the best plan to keep the queen whose eggs are to be used in a small hive having frames but five inches square and five frames to the hive. The eggs in the centre comb would be at the right age and condition for cell-building in just eighty-four hours after it was placed in the hive. Our way is to draw out the middle comb each day, and insert another one. We then have eggs every day in the proper condition for queen-rearing. These combs are placed in a queenless colony until needed. After warming the knife again, the comb is cut in strips through each alternate row of cells as indicated by the lines in fig. 7. When this has been done the pieces are laid flatwise upon a board, or on the table, and about half of the cell is cut off as illustrated in fig. 8. The knife should be very warm and sharp, or the ends of the cells would be made so ragged that the bees would be apt to remove the comb entire and no cells would be made.

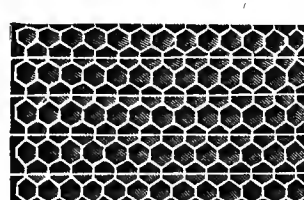


FIG. 7.

Reasons why the depth of the cells should be reduced.

At this point it is in order to state the reasons why the cells should be made so shallow. When a colony is seized with the swarming fever the first step taken is the construction of queen-cells. If the combs are examined, eggs will be found in large cells (cell-cups as they are called). It will be noticed that these cups are very shallow, say about a quarter of an inch deep. If a convenient location for a queen-cell cannot be found on the edge, or at the bottom of the combs, the bees are compelled to cut away the walls of several cells in order to get the proper amount of room at the base for the food and for the foundation for a cell of suitable size in which to rear a queen.

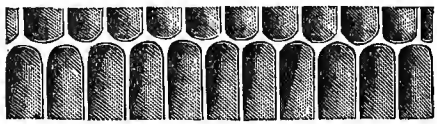


FIG. 8.

Should the depth of the cells not be reduced as here advised, the bees would be obliged to do it, and but few queen-cells would be made, especially if the comb containing the eggs is an old piece. Instead of queens being reared, worker bees would be produced, notwithstanding the unnatural position of the comb. Thus it will be seen by the little help rendered the bees in this way that it is a great inducement for them to construct cells from each egg placed in the hive.

How to destroy eggs in the cells.

In order not to have the cells made too near together, the egg in each alternate cell is destroyed. Now this is not a difficult thing to do by any means. I can destroy them as fast as any one can count. It is done in this way: Take the piece of comb containing the eggs in the left hand keeping those cells upwards that were cut, and insert the "scratch" end of a common match in each alternate cell and rapidly twirl it between the

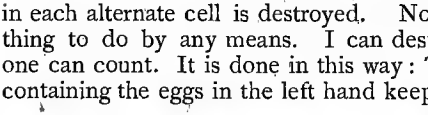


FIG. 9.

thumb and finger. This will effectually destroy the egg. Fig. 9 shows the cells and the eggs remaining after such an operation. While the destruction of half of the eggs will give nearly sufficient space for queen-cells, still a little more room is needed, though to one unacquainted with this method of rearing queens, it does not seem possible to obtain it, yet it can be done in this manner: If the row of queen-cells, illustrated in fig. 10, is examined, it will be seen that the piece of comb to which they are attached is curving or convex in form. By placing it on in that position, none of the queen-cells when finished will be joined together, though the bees will build a thin partition wall of wax between the cells; yet when separating them none will be injured if a little care is used in doing the work.

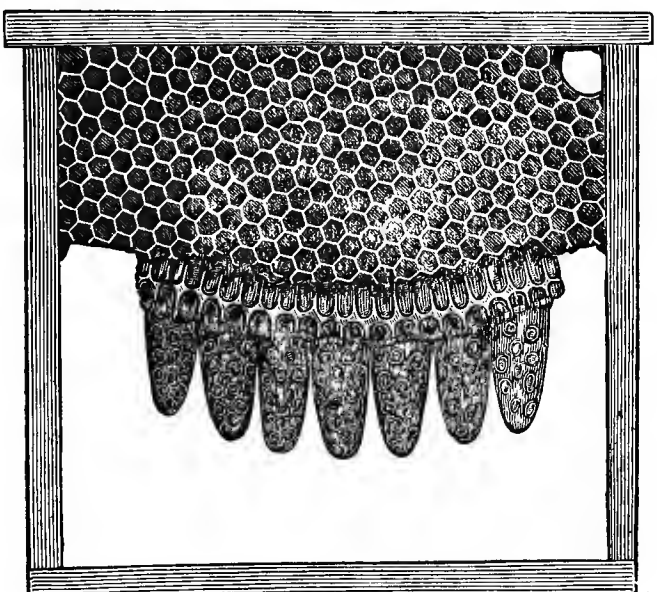


FIG. 10. *Queen-cells.*

Size of frames to be used for cells.

The comb and cells illustrated in fig. 10 are the same as is used in a hive in which I keep a queen whose eggs are used

wholly for cell-building; the bottom half of the comb being removed to give the proper amount of space for the row of queen-cells. When I have used such combs for cell-building, from sixteen to thirty-six were placed in one hive. The latter number is used only when one unusually large colony is taken for queen-rearing. The former number is as many as are needed for an ordinary-sized colony.

While it is quite convenient to use such combs for cell-building, I find that larger frames may be utilized to as equally good advantage. To make room for the cells, pieces of comb three inches long by two inches wide are cut out near the bottom of the frame. Some fifteen or twenty such combs are kept at hand in our apiary for that special purpose.

How to fasten the strips of comb in position.

When the strips of comb are prepared and ready to be placed in position, the cells that were *not* cut are dipped in the melted beeswax and rosin, and immediately placed in position as shown in fig. 10. The middle of the strip of comb should not be pressed down hard, but the ends should, as this will make it still more convex. There is such a thing, however, as overdoing the curving part of it. One must use his judgment in the matter.

Some minor details.

The wax-mixture must not be too hot, nor should the comb be dipped into it too far, as more wax would be used than is necessary. If too much adheres to the comb it would be likely to enter the cells and destroy the eggs in the cells on the opposite side from which the bees are to rear the queens.

Perhaps I may go into details too much if I say that the frame of comb to which the strip of eggs is to be attached should be inverted to better facilitate the operation. With but slight experience and practice one will soon learn how to do these things as they should be done. It would require a large volume to explain all the minor details connected with beekeeping or even in queen-rearing.

Finding a queen.

Many beekeepers write us that they would like to introduce an Italian queen if they could only find the one in the colony

to which they wish to introduce the new one. There are several ways to find the queen in any colony. A black queen in a black colony is the hardest to find (except a virgin queen) and an Italian queen, even in a colony of golden Italian bees, is the easiest to find. The heavy, rich golden color of a large, yellow queen is easily distinguished from the small striped bees that compose the colony.

The following is the easiest way I know of for the novice to proceed: Take a hive, nearly like the one the bees are in, place it on the ground or on a large cloth (a horse blanket will do), then place a drone-and-queen trap at the entrance of it and close any other holes the queen might pass through. Now, all is ready; smoke the bees, take out the frames one at a time and examine them carefully for the queen as they are removed; if not found, shake the bees from the comb in front of the empty hive on the ground and place each comb in the hive as examined. Continue to do so until all the combs are out and have been looked over. If the queen is not found, close the hive and with the use of the smoker drive the bees in through the metal on the trap and at the same time look sharp for the queen. She will, most likely, be found in a very few moments trying to pass through the metal.

I believe the above is the surest, quickest and easiest way for the novice to find a queen.

This work must not be done in the middle of the day, unless the bees are gathering honey, or robbing may be induced. Do it just about sunset. If too late to find the queen at night she will be found on the trap the next morning.

One other method for finding a queen is to remove the honey-board, place the cap on and drive the bees up into it by gradually blowing smoke in at the entrance and drumming on the hive five minutes or more. Turn the cap over and look for the queen. If not found, place another cap on and repeat the operation.

An old queen is rather slow about leaving the brood-nest, even when the bees are well smoked, and sometimes it is necessary to drive nearly all the bees out and even then remove the combs to find her.

The expert is not obliged to use the above method to find a queen. He merely blows smoke in at the entrance of the hive to alarm the bees and in a few moments uncovers the

frames, takes them out and examines each one until the queen is found. It usually requires about as much time for him to find a queen as it does to read these few lines descriptive of the method.

The beekeeper who is bound to succeed will soon find plenty of methods to do all the required work about the apiary. If one method fails he tries another.

A new plan for introducing queens.

The immediate introduction of queens is desirable. Here is a plan by which queens may be introduced at once when received. As soon as the queen in the colony to which the new queen is to be introduced is found, the shipping cage may be placed in the hive, provided the food is so arranged that the bees in the colony can remove it. The cage here illustrated is the one used for shipping queens by mail from the Bay State Apiary. It is the combination mailing-and-ship-

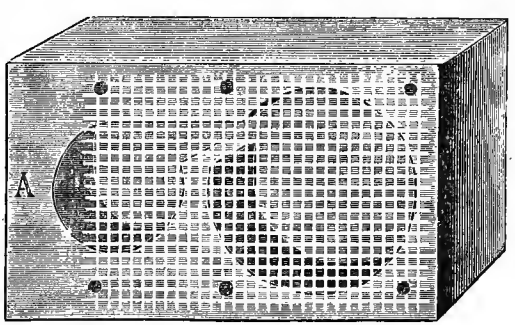


FIG. 11. *Alley's combined shipping and introducing cage.*

ping cage. If you will examine it you will notice that the wire-cloth does not quite cover the food. To introduce a queen with this cage, all that is necessary is to remove the cover and place it in the hive where the bees of the colony can get at the food. They will soon remove it and the queen will walk out successfully introduced. Have introduced hundreds in this way without the loss of one.

Re-queening after a swarm has issued.

More swarms than usual issued in the Bay State Apiary in the season of 1888. Not caring to have so many old stocks queenless several weeks, all were requeened as soon as possible after a swarm came out, but no attempt was made to do so in less than two days after the swarm issued. The cells were removed to nucleus colonies, and at the same time the new queens were introduced by the method given above, and not one queen was lost. Thus it will be seen that only two days were lost to the bees in brood-rearing.

It is not so important to re-queen immediately later in the season as at the first of it. Our bees commenced early in June to gather honey and swarms soon began to come out. Well, now had any colony been left to rear a queen the bees would at the end of four weeks have begun to diminish in numbers and before the harvest ended there would be hardly half as many bees in the hives as there were when they swarmed. When a colony is promptly re-queened there would be no great difference so far as numbers are concerned.

I am not a believer in contraction of the brood-chamber, nor do I believe in taking away the queen from a colony for any great length of time at any season of the year. Experience has taught me that a colony is always in the best condition that has a good queen, combs full of brood and plenty of young bees. A hive barren of these important requisites is nearly worthless, and unless a queen is soon introduced it will be useless for any purpose.

Keep the colonies supplied with strong, healthy queens. If a queen fails to keep the combs full of brood whether there is forage or not, pinch her head and get another. It does not pay to nurse up a colony having an unprolific queen.

Queenless colonies—How to treat them.

A colony that has been queenless four or five weeks or longer should have a frame of capped brood given them at the time the queen is introduced. Unless so treated, the colony would be badly reduced in numbers before any young bees would hatch. By the time the young bees began to emerge the combs should be full of brood. The colony then

would increase very fast. It is more difficult to introduce a queen to a colony that has been queenless a long time than it is to one that has been in a queenless condition but a few days.

When to supersede old queens.

No queen should be kept over two years. A queen may have been the best in her second year, and in the third season prove to be worthless. Keep your colonies supplied with young queens: that means success.

Queenless colonies—How to know them.

There is no way to know that a colony is queenless by outside appearances during the first few weeks after the loss of the queen. The only way to know certainly is to open the hive and make a thorough examination. If no eggs or brood is found in the combs, that would not indicate to a certainty that the colony does not have a queen of some kind. To know certainly that the colony has no queen fertile or unfertile, a frame of brood should be placed in the hive, and if they are queenless, an attempt will be made to rear one from the brood given them, and that is the time to introduce a fertile queen.

If a colony has been without a queen a long time, it is an easy matter for the experienced beekeeper to know it. When passing through the apiary, if a colony does not seem to be working as well as the others there must be something wrong. A queenless colony will carry in more or less pollen, but it does not work with that vigor that those colonies do that have queens or those that have been without a queen but a short time. Bees work just as well the first few weeks after being deprived of their queen as they did before she was removed.

How many frames to a hive.

It used to be thought that ten L. frames were about the right number for a hive $14\frac{1}{8}$ inches wide. But now eight frames, Langstroth size, are considered sufficient, or about the right number. None of the hives in the Bay State Apiary have over eight Langstroth frames and several have but seven frames, and I think I get the best results from the lat-

ter. Not only do they build up more quickly in the spring, but they are somewhat on the system of contraction without specially contracting any hive for the purpose. I am positive that the 7-frame hives winter better than those having eight or more frames. Then it has sometimes seemed to me that there are more bees in a 7-frame hive than in those having a larger number. Of course, it is understood that the width of the brood-chamber should be reduced and but one and one-half inches allowed to each frame.

Forming nuclei.

For many years I used a one-frame nucleus in my queen-rearing yards and with good success. A person who desires to rear but a few queens will find such a colony all that is needed. They can be made in this way: Take a full hive of bees and make as many small single-comb colonies as there are frames of brood, giving to each one an equal portion of the bees. Give the hives plenty of ventilation and place them in the cellar for three days and supply each with plenty of water. At the end of two days, towards night, give the bees a chance to fly and then introduce a cell or a queen. The cell can be placed between the comb and side of the hive at the top, and no cutting of the combs need be done. Let the bearing come against the base of the cell.

By confining the bees forty-eight hours, very few will return to the old location when released. Wire cloth must be used through which fresh air can reach the bees. As the nucleus hives cannot be placed on the old stand, it is necessary to give them a new location.

The hives should be made $1\frac{3}{4}$ inches wide inside; otherwise the same size of the hive from which the frames were taken.

Where shall partly filled sections be kept? also brood frames filled with honey?

There are at the present time (August, 1888) several hundred of unfilled sections in our apiary. Just where to keep them puzzled us for some time; finally they were placed on *strong* colonies and tiered up about six sections or cases high, and protected from the weather. The bees in a strong colony will preserve the combs from the moth and also keep the uncapped honey from souring in at least 250 sections.

Possibly, the bees may remove the honey from the sections; if they do, so much the better. Later in the season, when there is a good flow of honey, the cases can be replaced again on the best colonies. The advantage of this plan is this:

If a set of sections is left on each hive the combs will be badly discolored by the bees travelling over and clustering upon them. By the way, I hardly think the combs are discolored in that way, nor can I explain just what does give the white combs a yellowish cast; yet it does not seem to me that the bees do it with their feet. When tiered up, as suggested above, but few bees will be in any one of the sections at any time.

Keeping brood-combs.

We often have quite a quantity of brood-combs filled with new honey, but not all the cells capped. The uncapped honey was likely to sour and the moth liable to attack the combs on account of the pollen in some of the cells. I knew of no better way to preserve them than to put the combs in hives having no bottoms and tiering them up on strong colonies, the same as advised to do with the sections, say about three combs high. These combs can be used later on either to feed some of the stocks that have not quite honey enough to winter, or to form new colonies. However used, they must be protected from the moth and the hot weather during dog-days. If the colony is a strong one to which the combs are given, much of the uncapped honey will be capped, though the bees will be in no hurry about doing it.

Drones—How to get them late in the season.

In my queen-rearing experience I have seen times when I would willingly pay one dollar per hundred for some pure Italian drones; in fact, I am quite sure I have been obliged to pay out more than that sum to obtain them, counting the express bills and car fare I have put out the money for. A good many years ago, when about everybody lost their bees in winter and when there were but few Italian bees in the country, I had but one *pure* queen and a handful of bees to commence the season's work with. Well, it was up-hill work, but I managed to do a heavy queen business that year, notwithstanding the discouraging outlook in the early spring. That was the season

I had need for drones. It was necessary to keep the only breeding queen in a full colony in order to obtain them as well as eggs for queen cells; but later in the season, when the old lady had made up her mind that she had mothered all the males she thought necessary for that year, she refused to deposit more eggs for that purpose. Well, I was in a bad fix; yet it was necessary to do something and that quickly, as the supply of drones on hand would not last long and others must be had, or queen-rearing must go to the walls for the season. This prompted me to experiment. Though all the bee-books and authors tell us that young queens will not lay drone eggs the first year, I thought they could be made to do so. In this opinion I was right. I had one colony that had just finished a batch of queen cells, and as they saw the need of drones, the idea struck me that the bees had as much to do with the needs and desires of the colony as the queens. So I arranged a plan by which I forced the young queen to deposit her first eggs in drone cells. This is how I did it. The bees were removed from one of the best colonies I had, all the combs, save one, were placed in the hive again, the centre or middle comb being left out, and a nice, clean frame of drone-comb was placed directly in the middle of the brood-chamber. I then placed the queenless bees in the hive and gave them a fine, young queen, one of the brightest, golden Italians I could find in the hundreds of nucleus hives in my yard. In a few days I opened the hive and drew out the frame of drone-comb and to my surprise and great delight, I found that nearly every cell had an egg in it. This comb was then removed to a colony rearing queens, and the drone eggs were welcomed and nursed by the queenless bees. Another frame of drone-comb was placed in the hive with the young queen and more drone eggs were obtained, and thus the supply was kept up for the season with little or no trouble.

I believe it is generally understood that young queens will not deposit drone eggs the first year of their existence. This statement is handed down from one author to another, not one of them knowing that such is not a fact. Very few authors of bee-books have had experience covering all points in bee-keeping; hence the reason why wrong statements and quotations are made and go the rounds.

One other experiment to obtain drone eggs resulted in a

failure. I really supposed I had so arranged some combs that only drones could be reared, but the little rascals were too smart for me and my plans were upset. An old queen and several quarts of bees were placed in a hive having six frames containing drone-comb only, and I supposed, of course, that the bees must rear drones and nothing else. I watched the process day by day and had the satisfaction of seeing an egg in most of the cells; the little worm or grub was nursed, and finally the cells were sealed over, but not as drone cells are usually sealed with a projecting round cap; the capping was as smooth on the face of the comb as any worker brood, and worker brood, I discovered later on, was all the cells contained. Well, I was beaten, disappointed and disgusted. Just then another idea struck me. I began to think I had hit upon a plan to rear worker bees as large as drone bees. The workers hatched in due time, but they were no larger than any other bees, and I had the labor for my pains, and only the results of the experiment to pay me. Some one will say "Why didn't the bees rear drones the same as in the first case given?" The reason is this: The bees used in the first experiment had been queenless several days, while the bees used in the last experiment had not been. Does the reader see the point?

No one can know these things without actual experience and well conducted experiments. We must experiment or be governed by theory. I like to go to the bottom of all such things, and then when a statement is made the actual facts are at hand to back them up. No author should make statements that he is uncertain about. A standard work on any subject should contain actual facts and those founded upon experience.

How to know when robbing is going on in the apiary.

When robbing is going on in the yard I generally know it without going into the apiary. An occasional stray bee will come into the office where I am writing. As soon as discovered, the hive attacked is closed with a wire-screen to give ample ventilation. If but few bees have got at it, I manage to kill them with a piece of thin, wide board.

After the bees once become engaged in robbing they are of no use in the apiary, as they will continue to steal during the

rest of their lives, and the sooner they are disposed of the better. If much robbing is going on in the apiary, the thieving colonies should be found and removed to a new location, at least, a mile away. By sprinkling flour on the robber bees as they leave the hive being robbed, they can be easily traced to the stand where they belong. I have often broken up a colony which were robbing by blowing tobacco smoke into their hive. When this is done, care must be taken that the other colonies do not turn to and rob the one that has been fumigated.

Care should be taken in season to prevent robbing in the apiary. The most danger is during the first few days after the honey flow ceases. The bees at once commence to look around for the weak colonies, or any exposed sweets. Keep all honey out of reach and smell of the bees. Remember that a "stitch in time saves nine."

Should the bees get into the bee-house, the best plan is to fasten them in. Let them out just before it is too dark for them to find the hive. This will do more towards breaking up robbing than any other plan I know of. A few bees will return in the morning, but they will soon become discouraged and give up.

Best time of day to work on bees.

In many of the operations described in beekeeping, I have advised doing the work just before dark. I will give some of the reasons why that time of day is best to operate. 1. The bees are not as liable to rob as they are earlier in the day. 2. If the combs are slightly broken, or a little honey is dropped upon the ground, it will not set the bees to robbing as it would earlier in the day, as the disturbed colony would be in condition the next morning to defend their combs. 3. It is well known that bees keep very quiet in the dark. A colony made queenless in season to miss her just before dark would keep quiet until daylight returns, when they will make a search for her. But after being queenless all night they soon become reconciled and quickly quiet down. No matter what the operation is, the bees need time to recover from it, and when they have the night before them there is no loss of time.

How to preserve a queen several days after she is received by mail.

Many of those who purchase queens do not seem to know how to keep them until they can be introduced. If the queen is received in good condition the cage may be placed over a colony (one having no queen is best) in this way: Make an inch hole in the honey-board or arrange it in any way so that the part of the cage having the queen in can be so placed that the bees in the colony can get at it and feed her through the meshes of the wire cloth. Not only will the bees feed the queen, but she will remain perfectly quiet all the time while thus confined. Place the cage on a queenless colony if one is in the apiary.

Bee Periodicals published in America.

There are no less than nine publications in America devoted partly or wholly to apiculture. Two are published in Canada and seven in the United States.

Of those published in Canada, D. A. Jones & Co. issue the "*Canadian Bee Journal.*" This is a weekly and its corps of writers are able and well known in the apicultural world.

The other Canadian publication, "*The Canadian Honey Producer*" is a monthly and is edited by R. F. Holterman of Brantford. Mr. Holterman was formerly one of the best correspondents the *Apiculturist* had. The "*Canadian Honey Producer*" is ably edited and should meet with success.

In the United States we have *The Beekeepers' Advance*, edited and published monthly by J. B. Mason of Mechanics Falls, Maine. "*The Bee-Hive*," by E. H. Cook of Andover, Conn, is also a monthly. Then we have the "*Queen Breeders' Journal*" by E. L. Pratt of Marlboro, Mass. This is a new publication and comes monthly. It is the smartest of the new papers devoted to bee culture.

"*The Beekeepers' Review*" is in its second year and is published monthly. Its editor is W. Z. Hutchinson, of Flint, Mich. Brother H. knows how to keep bees and how to edit a paper. Should say the enterprise is in a condition to succeed.

Gleanings in Bee Culture.

I hardly need introduce the editor of this last publication to the reader. Mr. A. I. Root and his paper are as well known to all beekeepers as to me. Brother Root was invited to give a brief history of "*Gleanings*" for this work. As it is so well and nicely told by Mr. Ernest Root, son of A. I. Root, we give it in full.

"The history of Gleanings is briefly told, because its career is very similar to other periodicals which have had a fair measure of success in their line. It was established in 1873 as a quarterly, and edited by A. I. Root. No sooner was the first issue out when it became evident from the manner in which it took that it should be made into a monthly. In the following February the second number was issued. It continued as a monthly until the year 1882, at which time the Juvenile Gleanings was issued the fifteenth of every month. This child continued to grow until it rivalled its parent in size, when in January, 1884, it was merged into the semi-monthly Gleanings in Bee Culture, the juvenile gleanings being only a department in the issue of the middle of every month. In 1875, it had a subscription list of 1200; in 1879, 4368; in 1882, 5445. This last has steadily grown until at the present time there are very nearly 9,000 subscribers. In 1885, in consequence of the rush of editorial work as well as the usual rush of business, younger blood in the person of E. R. Root, who left school for the purpose, was called to assist. Just at this time Mr. Root, Jr., selects the matter as well as answers considerable of the correspondence, the senior editor answering most of the correspondence and keeping a hand on the throttle valve.

Some of the distinctive peculiarities of Gleanings are, first, it seeks to avoid all discussion which will in any way give pain to one or the other of the parties engaged in the discussion. It has numerous departments and is well illustrated, the cuts for a single issue costing from ten to twenty dollars on an average."

The American Bee Journal.

The *American Bee Journal* was the first one to appear in the interest of beekeepers. Not being well informed regard-

ing its history, Brother Newman was requested to furnish the facts. They are as follows:

The *American Bee Journal* was started by the late Samuel Wagner in January, 1861, as a monthly, at Philadelphia, Pa., and that was the first periodical ever issued in America devoted to bee culture. It was suspended at the end of that year on account of the civil war, but its publication was resumed in July, 1866, at Washington, D. C., after much unavoidable delay.

On June 15, 1866, just two weeks before the resumption just mentioned, the Rev. E. Van Slyke began the publication of the *American Bee Gazette* in New York. At the end of that year, Mr. Samuel Wagner purchased the *Gazette*, and united the two periodicals,—only some six numbers of the *Gazette* having been issued.

Mr. Samuel Wagner died on Feb. 17, 1872, and his son George S. Wagner continued the publication until the end of 1872, when he transferred it to the Rev. W. F. Clarke, who moved it to Chicago, where he edited and published it during the year 1873.

In December of that year, the present editor, Thomas G. Newman, purchased the interest of Mr. Clarke in its transfer from Mr. Wagner, and also purchased Mr. Wagner's entire interest in it, becoming its sole owner. It was issued monthly until December, 1880, when it was changed to a weekly. For eight years it has been issued weekly, and is now published at $1.00 a year. It is now in its twenty-fifth year of publication, and the sixteenth year since it came into the hands of its present editor and publisher.

The *National Bee Journal* was purchased in 1874 and consolidated with the *American Bee Journal*.

The American Apiculturist.

This publication was established in 1883, by Silas M. Locke of Salem, Mass. After it had run some three years, Mr. Locke's health failed, and he was obliged to dispose of the paper. Since that time, the present manager has published it regularly. The APICULTURIST is issued monthly at Wenham, Mass. Price 75 cents per annum.

INDEX.