

## CIVIL AERONAUTICS JOURNAL



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## Nine Months Civil Aircraft Output up 69.7 Percent over 1939 Period

*Production Statistics Show Trend Toward Heavier Aircraft  
With More Powerful Engines; Output of Airline Transport-  
Type Planes Also Shows Large Increase Over Last Year*

Total domestic civil aircraft production, reflecting the sharp expansion in commercial air carrier activities and record-breaking increases in the number of active pilots, during the first 9

months of this year reached 4,543 units, a 69.7 percent increase over the 2,698 aircraft produced during the comparable 9 months of 1939.

Compared with the output for the full year 1939, production showed an increase of 22.29 percent over the 3,715 units produced.

Sharpest gain, on a percentage basis, was registered in the production of multiengine, heavy airplanes of the type used by commercial airlines. Output for the first 9 months of this year was 93 units, a 178.3 percent increase over the 46 produced in the corresponding 1939 months.

Production of small one- and two-place single engine landplanes continued at a high level, the January-September 1940 output totaling 3,631 units against 2,247 in the 1939 period, a gain of 61.6 percent.

In the three- to five-place landplane single engine category, production also showed a large percentage gain for the first 3 quarters of this year over a like period in 1939. Output was 734 units, a 133.8 percent gain over the 314 units produced last year.

The total production of all single-engine planes for the 9 months of 1940 was 4,383 units, a 69 percent increase over the 2,593 produced in the 1939 period. Output of multiengine planes this year was 125, a 66.7 percent gain over the 75 produced in the 1939 period.

Grouped according to engine horsepower, the production for the 9-month period of this year depicts the trend in aircraft output even more graphically. For instance, aircraft with engines of 50 horsepower and under showed a sharp decrease from the 1939 production, totaling only 317 against 1,229, a drop of 74.2 percent. However, the output of aircraft having engines of 51-70 horsepower showed an increase even sharper than the decrease in the lesser-powered planes. During the January-September period, production of this type of airplane reached 3,031 units, by far the largest single classification. Production in the comparable 1939 months was 957 units, an increase in 1940 of 21.7 percent.

(See PRODUCTION, page 484.)

### Stanton Appointed Assistant Administrator of Civil Aeronautics

Charles I. Stanton, veteran aviation official in Government and for more than 12 years a key executive of the Federal Airways System, has been appointed as Assistant Administrator of Civil Aeronautics. His promotion will extend his jurisdiction to include nearly all of the technical services for aviation performed by the Civil Aeronautics Administration.

Coincident with the appointment of Mr. Stanton, Col. Donald H. Connolly, Administrator of Civil Aeronautics, announced the appointment as administrative consultant of Arlin E. Stockburger, California public administration executive who until his recent resignation was deputy mayor of Los Angeles.

Mr. Stanton is 47, a native of Massachusetts, a graduate of Tufts College and a civil engineer. A World War

(See STANTON, page 479.)

#### SPECIAL NOTICE

The CIVIL AERONAUTICS JOURNAL now prints in full all amendments to the Civil Air Regulations, except for occasional amendments which may be exceedingly long. In the latter case, an abstract will fully describe the nature and purpose of the amendment's provisions so the reader may determine whether he requires the full text.

There also will appear in each issue of the JOURNAL a tabulation showing the status of all active parts of the Civil Air Regulations and the amendments thereto which are in effect. The chart shows at a glance how to obtain those parts immediately available, and explains the progress toward publication of those parts in process of printing or revision.

These new services will appear regularly in the official actions section of the JOURNAL, and may be found in this issue on page 488.



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## W. P. A. Announces Program for Aviation Ground Work

To Give up to 5,750 Persons Two to Three Months' Training at Airports Designated by the C. A. A.; \$1,429,690 to be Expended to Meet Increased Needs for Servicemen

A special W. P. A. project for the training of aviation ground servicemen to meet the increased needs growing out of the rapid expansion of civil and military aviation was announced on October 10, by Howard O. Hunter, Acting Commissioner of Work Projects.

The project has been approved by President Roosevelt and calls for the expenditure of \$1,429,690 of W. P. A. funds. A maximum of 5,750 persons from W. P. A. rolls will be given from 2 to 3 months' training at airports designated by the Civil Aeronautics Administration. The project is sponsored by the Advisory Commission to the Council of National Defense and co-sponsored by the C. A. A. and the Office of Education.

"This is an adjunct to the Nationwide project for the vocational training of defense workers which W. P. A. is now operating in conjunction with the Defense Commission and the Office of Education," Mr. Hunter explained. "It has been set up on an independent basis, however, because of the pressing need for more trained workers in this specialized field.

"Under the greatly expanded civil and military aviation program, and with the prospect of the early launching of an enormous airport building program, the need for efficient ground crews and servicemen is apparent. Workers in this field, while not required to be expert mechanics, must be familiar with airplanes, their fueling and checking, C. A. A. traffic regulations, clerical and paper work incidental to airport operation, and the requirements of airport maintenance.

"Qualified workers will be selected from W. P. A. rolls to take the training course. As in the case of those receiving vocational training for defense industries, they will continue to receive their regular W. P. A. wages while undergoing training. Instructors will be chosen by local educational authorities under the direction of the Office of Education."

Mr. Hunter said that training probably would be given to groups of from 10 to 15 men at a time at some 100 airports to be designated by the C. A. A. Training probably will extend over a period of from 2 to 3 months for each group, after which it is expected they will be privately employed. Selection of those to receive training will be the responsibility of local W. P. A. authorities, he said, with such qualities as adaptability, education, and previous experience being given consideration.

Technical aspects of the training program are being worked out by the C. A. A., Mr. Hunter continued. The Office of Education, meanwhile, is preparing a textbook and course of study patterned

somewhat after those used successfully by large oil companies in the training of service-station attendants. The technical requirements, however, it was pointed out, are considerably above those demanded of service-station employees. Safety of air travel will be the predominant note throughout the training program.

A preliminary step in the program will be the training of an initial group of instructors, he explained. As soon as a standard course of study has been worked out, a carefully chosen nucleus of the teaching force, previously selected from various parts of the country, will be brought to Washington. Generally, these will be men with previous airport experience. In Washington they will be given a brief, intensive course in the training technique and then returned to their respective communities, where they, in turn, may train other teachers or conduct regular training courses themselves. Approximately 100 teachers will be required for the program, he said.

Mr. Hunter said the program probably would be placed in operation first somewhere in the vicinity of Washington, D. C., in order that officials might observe it during the formative stage. Later, it will be expanded to other centers of aviation activity as rapidly as instructors are available and sites are designated by the C. A. A. He anticipates, he added, that the program will be in full operation within the next 60 days.

### Statistical Summary

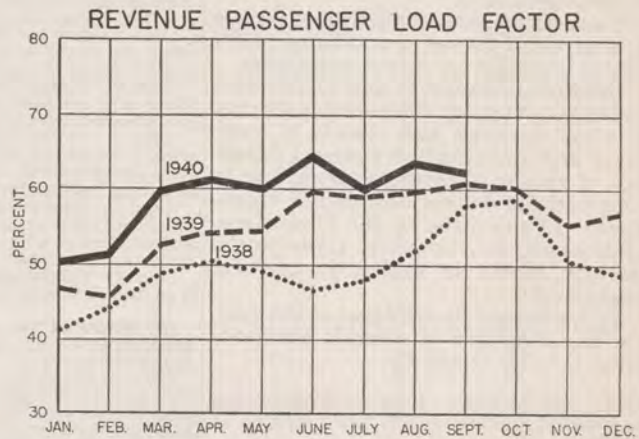
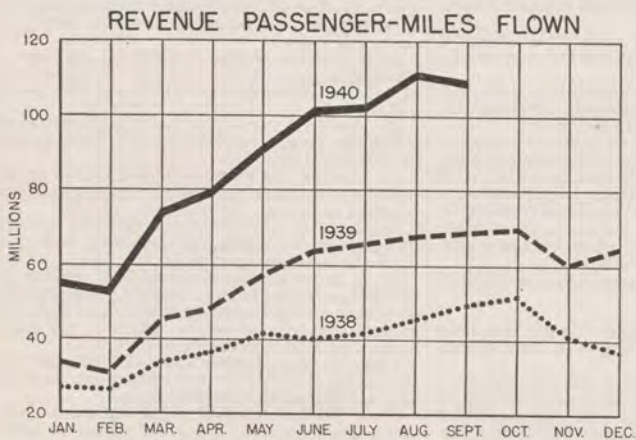
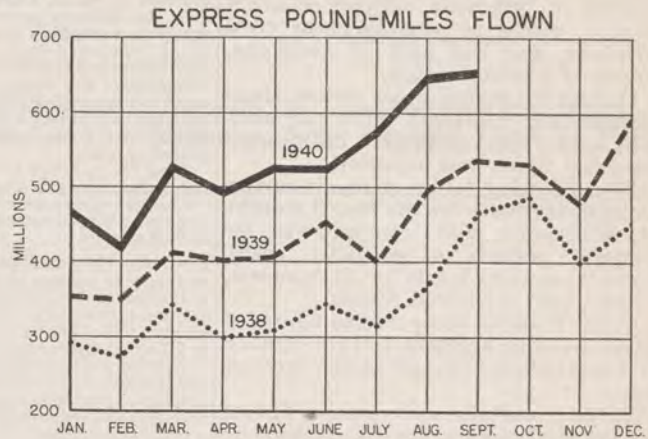
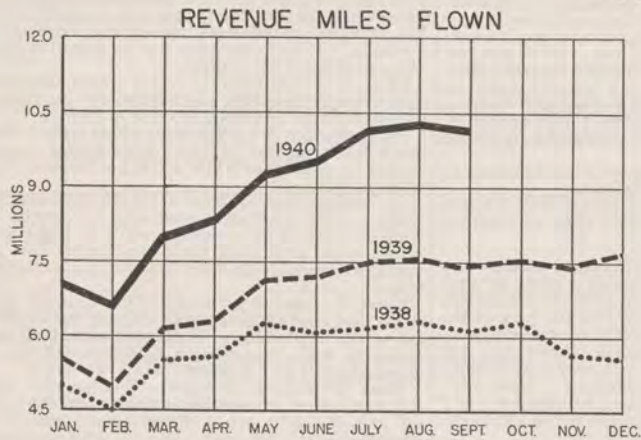


Increases in domestic air carrier traffic operations during September ranged from 20.35 to 61.29 percent over the results for September 1939, according to figures filed with the Civil Aeronautics Administration. Largest percentage gain was reported for revenue passengers carried. For September this year, the total was 287,450, up 61.29 percent from the corresponding 1939 month.

Other results, with percentage changes from September of last year, include: revenue passenger miles flown, 10,084,445, up 35.51 percent; revenue passenger-miles flown, 107,848,222, a gain of 56.11 percent; and express pound-miles flown, 645,933,371, an increase of 20.35 percent. The September 1940 revenue passenger load factor was 62.06 percent compared with 61.37 percent for September 1939.

# Air Transportation

## Domestic Air Carrier Traffic Statistics for 1938, 1939, and the First 9 Months of 1940



### Domestic Air Carrier Traffic Statistics for September 1940

Operator	Revenue miles flown		Revenue passengers carried		Revenue passenger-miles flown		Express pound-miles flown		Revenue passenger load factor (percent)	
	September 1940	Percent change over 1939	September 1940	Percent change over 1939	September 1940	Percent change over 1939	September 1940	Percent change over 1939	September 1940	September 1939
American Airlines, Inc.	2,507,026	43.45	93,376	63.12	31,981,927	51.61	176,186,000	13.06	70.22	70.60
Boston-Maine Airways, Inc.	92,425	33.62	3,205	58.90	473,123	50.78	476,097	15.68	52.13	45.36
Braniff Airways, Inc.	406,449	33.53	11,068	86.46	3,395,272	82.23	15,365,520	34.62	45.20	62.00
Chicago & Southern Air Lines, Inc.	190,101	18.75	4,476	96.57	1,639,891	83.14	6,973,502	23.05	45.38	55.94
Continental Air Lines, Inc.	121,148	22.40	1,639	99.39	501,287	99.23	657,547	53.94	45.59	37.14
Delta Air Corporation	202,648	39.07	5,038	76.09	1,292,453	81.42	1,959,414	-7.28	53.03	48.89
Eastern Air Lines, Inc.	1,298,002	42.52	33,873	59.89	12,414,872	54.33	74,354,255	40.25	53.40	49.95
Inland Air Lines, Inc.	93,644	11.95	1,437	53.69	377,629	51.88	503,706	7.04	40.32	29.72
Mid-Continent Airlines, Inc.	137,448	27.32	2,604	53.09	724,082	64.09	1,166,386	.89	41.61	43.83
National Airlines, Inc.	98,380	72.60	1,543	131.33	346,932	150.11	794,152	165.73	35.26	24.34
Northwest Airlines, Inc.	527,094	14.91	14,428	40.27	5,845,186	39.42	24,820,690	7.64	55.79	55.15
Pennsylvania-Central Airlines Corporation	385,931	16.50	21,511	63.52	3,757,963	69.14	15,080,027	15.25	55.43	67.10
Transcontinental & Western Air, Inc.	1,551,890	38.10	35,701	69.56	18,136,787	73.16	102,430,544	26.74	65.36	55.77
United Air Lines Transport Corporation	2,238,283	37.74	48,836	53.59	25,112,532	48.76	209,014,822	18.64	67.20	68.91
Western Air Express Corporation	217,315	24.20	5,081	62.07	1,739,266	48.72	15,770,129	29.09	54.11	53.83
Wilmington-Catalina Airlines, Ltd.	16,661	6.39	3,634	20.21	109,020	20.21	380,580	-30.22	66.68	57.65
<b>Total</b>	<b>10,084,445</b>	<b>35.51</b>	<b>287,450</b>	<b>61.29</b>	<b>107,848,222</b>	<b>56.11</b>	<b>645,943,371</b>	<b>20.35</b>	<b>62.06</b>	<b>61.37</b>

# First Half Accident Statistics

**Domestic, Foreign, and Territorial Airlines Flew 53,639,568 Miles With No Fatalities; Only 21 Accidents Occurred**

Air carriers operating along domestic, foreign, and territorial routes flew 53,639,568 miles during the first 6 months of this year without a single fatality, either to passengers or crew members, and had only 21 accidents, largely of a minor nature.

During the period under review, these carriers flew 2,554,265 miles per accident, and a total of 544,211,123 passenger-miles flown was reported.

The following tables show air carrier accident statistics for the first 6 months of this year with comparisons for 6-month periods of previous years. Table A contains totals for all domestic, foreign, and territorial routes.

Table B shows comparative figures of miles flown per accident and per fatality in domestic scheduled air carrier services alone.

Table C contains comparative figures in vital statistics and results of accidents occurring in domestic scheduled air carrier operations.

Table D includes comparative figures in analysis of causes of accidents occurring in domestic air carrier operations.

Heretofore, tables C and D included footnotes showing comparative figures in vital statistics and results of accidents and comparative figures in analysis of causes of accidents occurring in nonscheduled domestic air carrier operations. In this issue of the Civil Aeronautics Journal, however, these statistics are shown in tables C<sub>1</sub> and D<sub>1</sub>, respectively.

Following are descriptions of the various classifications of aircraft accidents listed in table C and C<sub>1</sub>:

**I. Injury to personnel.**—Under this head accidents are classified according to the injury suffered by persons.

**Class A.**—A "class A" injury is one resulting in the death of the individual within a period of 90 days.

**Class B.**—A "class B" injury is one resulting in serious injury to the individual. Because of the difficulties of classification, the opinion of a physician is obtained whenever possible as to whether an injury is severe or minor. When a physician is not available, the following general rules are followed: Any injury that results in unconsciousness; any fracture of any bone except simple fractures of the fingers and toes; lacerations that involve muscles or cause severe hemorrhage; any injury to any internal organ; or any other injury that it seems probable will incapacitate the individual for more than 5 days should be classed as a severe injury. All other injuries are classed as minor.

**Class C.**—A "class C" injury is one resulting in only minor injury to the individual.

**Class D.**—Any person who experiences an aviation accident with no personal injury shall be classified as "class D."

**NOTE.**—The classification of an accident according to injury to persons shall contain a letter for each individual in the aircraft at the time of the accident, the first of these letters representing the pilot of the aircraft. For example, in an accident where the pilot is killed, one passenger seriously injured, and the remaining passenger escapes with only minor injury the accident would be classified as a class ABC accident. Had the pilot escaped with minor injury and both passengers been killed, it would have been a class CAA accident.

**II. Damage to material.**—Under this head accidents are classified according to the amount of damage which occurs to material.

**Class A.**—This includes all accidents as a result of which the aircraft is of no further value except for possible salvage of usable parts.

**Class B.**—This includes all accidents as a result of which it is necessary to completely overhaul the aircraft before it would be again airworthy.

**Class C.**—This includes all accidents as a result of which it is necessary to replace some major assembly of the aircraft before it would be again airworthy, such as a wing, fuselage, undercarriage, tail, or engine.

**Class D.**—This includes all accidents resulting in minor and easily repairable damage to the aircraft, such as a broken wheel, bent rudder, bent propeller, broken cylinder, broken oil cooler, etc.

**Class E.**—This includes all accidents in which there is no damage to material.

**III. Nature of the accident.**—Under this head accidents are classified according to the type of accident which occurs.

**Class A—Collisions in full flight with other aircraft.**—This includes collisions with airplanes, balloons, or other aircraft while the colliding aircraft is at flying speed or at an altitude which permits free maneuvering. It excludes collisions on the ground while taxiing, taking off, or landing. (See classes F and G.)

**Class B—Collisions in full flight with objects other than aircraft.**—This includes collisions while at flying speed and with engine functioning normally, with birds, towing lines, towed sleeves, trees, poles, wires, houses, mountain sides, or other objects. It includes collisions with the earth or water by diving. It excludes collisions on the ground while taxiing, taking off, or landing. It excludes accidents to an aircraft caused by parts of the same aircraft becoming detached in flight and flying back or striking other parts of the aircraft. (See classes F and G.)

**Class C—Spins or stalls following engine failure.**—This includes spins, stalls, and all collisions with the earth while the airplane is out of control due to loss of flying speed following engine failure.

**Class D—Spins or stalls without engine failure.**—This includes spins, stalls, and all collisions with the earth while the airplane is out of control following loss of flying speed, with the engine functioning normally. It includes spins due to defective handling qualities of the airplane.

**Class E—Forced landings.**—This covers accidents while making landings necessitated by conditions which could not be overcome while in flight.

(1) **Emergency forced landings.**—This covers accidents while making landings immediately necessitated by conditions which could not be overcome while in flight.

(2) **Deferred forced landings.**—This covers accidents while making landings necessitated by conditions which could not be overcome while in flight and which make continued flight inadvisable but do permit a reasonable time for the selection of a landing area.

**Class F—Landing accidents.**—This includes accidents occurring while the pilot is in the act of making a voluntary landing. It excludes forced landings, accidents while examining a field from the air or approaching it for a landing.

**Class G—Take-off accidents.**—This includes accidents occurring between the time of starting the take-off and the time when flying speed permitting normal control has been attained with sufficient altitude to permit free maneuvering.

**Class H—Taxiing accidents.**—This includes accidents which occur while the aircraft is being operated as such and is maneuvering under its own power on land or water.

**Class I—Fires.**—This includes all accidents in which fires occur while the aircraft is being operated as such. It excludes fires which are the result of collision.

(1) **Fires in the air.**—This includes all accidents in which fires occur while the aircraft is being operated as such in the air.

(2) **Fires on the ground.**—This includes all accidents in which fires occur while the aircraft is being operated as such on the ground.

**NOTE.**—Fires after accident.—This is a secondary grouping for statistical purposes only, and should not be included under class I.

**Class N—Structural failure.**—This includes all accidents resulting in loss of control of the aircraft, as a result of a failure while in flight of any part of the aircraft structure or engine which is not due to contact with any external object.

**Class X—Miscellaneous.**—This includes accidents the nature of which is known but which do not fall into one of the above classifications.

**Class Y—Undetermined.**—This includes all accidents concerning the nature of which so little is known that any other classification cannot be intelligently made.

**TABLE A.—Miles Flown Per Accident in Domestic, Foreign, and Territorial Air Carrier Services for Each 6-Month Period of the Years 1936 Through 1939**

	1936		1937		1938		1939		1940 January-June
	January-June	July-December	January-June	July-December	January-June	July-December	January-June	July-December	
Miles flown.....	33,666,961	39,944,809	36,693,748	40,709,617	39,009,163	42,048,964	41,128,792	49,847,271	53,639,568
Total number of accidents.....	42	28	28	22	21	23	20	19	21
Miles flown per accident.....	801,594	1,426,600	1,310,491	1,850,437	1,857,579	1,828,216	2,056,440	2,623,541	2,554,265
Total number of fatal accidents.....	5	5	3	3	5	3	2	1	0
Miles flown per fatal accident.....	6,733,392	7,988,962	12,231,249	13,569,872	7,801,833	14,016,321	20,564,396	49,847,271	0
Total number of pilot fatalities.....	4	5	2	3	5	1	1	1	0
Miles flown per pilot fatality.....	8,416,740	7,988,962	18,346,874	13,569,872	7,801,833	42,048,964	41,128,792	49,847,271	0
Total number of passenger fatalities.....	205,648,792	288,635,979	242,981,192	309,667,397	291,655,918	343,900,266	347,038,671	487,779,571	554,211,123
Passenger-miles flown.....	27	19	22	29	22	10	9	10	0
Total number of passenger fatalities.....	7,616,622	15,191,320	11,044,600	10,678,186	13,257,087	34,300,026	38,559,852	48,777,957	0
Passenger-miles flown per passenger fatality.....									

**TABLE B.—Comparative Figures of Miles Flown Per Accident and Per Fatality in Domestic Scheduled Air Carrier Services for the January–June Periods of the Years 1936 Through 1940**

	January–June 1936	January–June 1937	January–June 1938	January–June 1939	January–June 1940
Miles flown.....	29, 078, 403	31, 147, 776	33, 142, 289	37, 182, 929	49, 021, 661
Total number of accidents.....	39	25	15	18	19
Miles flown per accident.....	745, 600	1, 245, 911	2, 209, 486	2, 065, 718	2, 580, 087
Total number of fatal accidents.....	4	3	3	2	0
Miles flown per fatal accident.....	7, 269, 601	10, 382, 592	11, 047, 430	18, 591, 465	.....
Total number of pilot fatalities.....	4	2	3	1	0
Miles flown per pilot fatality.....	7, 269, 601	15, 573, 888	11, 047, 430	37, 182, 929	.....
Passenger-miles flown.....	179, 503, 354	204, 516, 204	251, 138, 579	309, 893, 955	499, 924, 095
Total number of passenger fatalities.....	25	22	21	9	0
Passenger-miles flown per passenger fatality.....	7, 180, 134	9, 296, 191	11, 958, 980	34, 432, 662	.....

**TABLE C.—Comparative Figures in Vital Statistics and Results of Accidents Occurring in Domestic Scheduled Air Carrier Operations for the January–June Periods for the Years 1936 Through 1940**

	January–June 1936	January–June 1937	January–June 1938	January–June 1939	January–June 1940 <sup>1</sup>	Average for the five periods
Number of accidents involving—						
Fatal injuries.....	4	3	3	2	0	2.4
Severe injuries.....	3	1	0	1	1	1.2
Minor and no injuries.....	32	21	12	15	18	19.6
Total accidents.....	39	25	15	18	19	23.2
I. Injury to personnel:						
Pilots:						
Fatal injury, class A.....	4	2	3	1	0	2.0
Severe injury, class B.....	3	1	0	1	1	1.2
Minor injury, class C.....	1	0	0	0	0	.4
Uninjured, class D.....	31	22	12	17	19	20.2
Copilots:						
Fatal injury, class A.....	2	3	3	1	0	1.8
Severe injury, class B.....	1	0	0	1	0	.4
Minor injury, class C.....	1	0	0	0	1	.4
Uninjured, class D.....	24	19	12	15	18	17.6
Passengers:						
Fatal injury, class A.....	25	22	21	9	0	15.4
Severe injury, class B.....	5	7	0	3	0	3.0
Minor injury, class C.....	16	1	0	4	4	5.0
Uninjured, class D.....	174	102	123	107	152	131.6
Aircraft crew:						
Fatal injury, class A.....	1	2	2	1	0	1.2
Severe injury, class B.....	1	1	0	0	0	.4
Minor injury, class C.....	2	0	0	1	0	.6
Uninjured, class D.....	13	9	11	9	15	11.4
Ground personnel:						
Minor injury, class C.....	1	0	0	0	0	.2
Total injuries and noninjuries:						
Fatal injury, class A.....	32	29	29	12	0	20.4
Severe injury, class B.....	10	9	0	5	1	5.0
Minor injury, class C.....	21	1	0	5	5	6.4
Uninjured, class D.....	242	152	158	148	204	180.8
Total.....	305	191	187	170	210	212.6
II. Damage to material:						
Airplanes:						
Completely demolished, class A.....	8	6	3	2	0	3.8
Complete overhaul, class B.....	14	9	3	5	6	7.4
Major assembly repairs, class C.....	17	10	6	8	11	10.4
Minor repairs, class D.....	0	0	3	4	5	2.4
Not damaged, class E.....	0	0	0	1	0	.2
III. Nature of accident:						
Collision (see definition), class A.....	0	0	0	0	0	0
Collision (see definition), class B.....	2	3	1	1	3	2.0
Spins or stalls (engine failure), class C.....	0	0	0	0	0	0
Spins or stalls (not engine failure), class D.....	0	1	0	0	0	.2
Forced landings, class E.....	3	3	2	1	0	1.8
Landing accidents, class F.....	15	11	3	7	9	9.0
Take-off accidents, class G.....	8	2	2	0	1	2.6
Taxying accidents, class H.....	8	5	2	5	4	4.8
Fires in the air, class I.....	1	0	1	1	0	.6
Structural failures, class N.....	1	0	2	0	0	.6
Miscellaneous, class X.....	0	0	2	3	2	1.4
Indeterminate and doubtful, class Y.....	1	0	0	0	0	.2
Miscellaneous information:						
Fires after accident.....	2	0	1	1	0	.8
Propeller accidents to persons.....	0	1	0	0	0	.2

<sup>1</sup> Two foreign scheduled air carrier accidents for this period involving 2 pilots, 2 copilots, 10 aircraft crew, and 7 passengers all uninjured are not included in these statistics.

**TABLE C1.—Comparative Figures in Vital Statistics and Results of Accidents Occurring in Nonscheduled Domestic Air Carrier Operations for the January-June Periods for the Years 1936 Through 1940**

	January-June 1936	January-June 1937	January-June 1938	January-June 1939	January-June 1940	Average for the five periods
Number of accidents involving—						
Fatal injury.....	2	0	0	0	0	.4
Minor and no injury.....	10	6	5	2	5	5.6
Total accidents.....	12	6	5	2	5	6.0
I. Injury to personnel:						
Pilots:						
Fatal injury, class A.....	1	0	0	0	0	.2
Uninjured, class D.....	12	6	5	2	5	6.0
Copilots:						
Minor injury, class C.....	0	0	0	0	1	.2
Uninjured, class D.....	6	6	5	2	3	4.4
Passengers: Uninjured, class D.....	0	1	6	19	0	5.2
Aircraft crew:						
Minor injury, class C.....	1	0	0	0	2	.6
Uninjured, class D.....	2	0	0	1	6	1.8
Ground personnel: Fatal injury, class A.....	1	0	0	0	0	.2
Total injuries and noninjuries:						
Fatal injury, class A.....	2	0	0	0	0	.4
Minor injury, class C.....	1	0	0	0	3	.8
Uninjured, class D.....	19	13	16	24	14	17.2
Total.....	22	13	16	24	17	18.4
II. Damage to material:						
Airplanes:						
Completely demolished, class A.....	1	1	0	0	0	.4
Complete overhaul, class B.....	6	2	2	2	4	3.2
Major assembly repairs, class C.....	5	3	1	0	1	2.0
Minor repairs, class D.....	1	0	2	0	0	.6
III. Nature of accident:						
Forced landings, class E.....	1	0	0	0	0	.2
Landing accidents, class F.....	5	4	4	1	2	3.2
Take-off accidents, class G.....	3	1	0	0	2	1.2
Taxying accidents, class H.....	3	1	0	1	1	1.2
Structural failures, class N.....	0	0	1	0	0	.2

**TABLE D.—Comparative Figures in Analysis of Causes of Accidents Occurring in Domestic Scheduled Air Carrier Operations for the January-June Periods for the Years 1936 Through 1940**

[Causes of accidents indicated in percentages]

	January-June 1936	January-June 1937	January-June 1938	January-June 1939	January-June 1940 <sup>1</sup>	Average for the five periods
Number of accidents involved.....	39	25	15	18	19	23.2
CAUSES						
Personnel:						
Pilots:						
Error of judgment.....	10.26	7.80	1.67	0	2.63	5.78
Poor technique.....	10.25	4.00	15.00	16.67	19.21	11.98
Disobedience of orders or regulations.....	0	0	0	5.55	0	.86
Carelessness or negligence.....	10.90	4.00	16.66	20.00	30.79	14.83
Miscellaneous.....	0	0	0	0	0	0
Total pilot errors.....	31.41	15.80	33.33	42.22	52.63	33.45
Other personnel:						
Supervisory.....	6.41	3.40	0	5.56	0	3.75
Miscellaneous.....	3.85	0	0	0	5.26	2.15
Total personnel errors.....	41.67	19.20	33.33	47.78	57.89	39.35
Material:						
Power plant:						
Fuel system.....	6.41	0	0	0	3.16	2.67
Cooling system.....	0	0	0	0	0	0
Ignition system.....	0	0	0	0	0	0
Lubrication system.....	0	0	0	0	1.32	.22
Engine structure.....	5.13	0	13.33	7.78	2.63	5.09
Propeller assembly.....	0	4.00	0	0	0	.86
Engine control system.....	0	0	0	5.55	0	.86
Miscellaneous.....	0	0	0	0	0	0
Undetermined.....	2.56	0	0	0	0	.86
Total power plant failures.....	14.10	4.00	13.33	13.33	7.11	10.56
Structural:						
Flight control system.....	0	0	0	0	0	0
Movable surfaces.....	0	0	3.33	0	0	.43
Stabilizing surfaces.....	0	0	3.33	0	0	.43
Wings, struts and bracings.....	0	0	0	0	0	0
Undercarriage.....	10.26	4.00	0	0	0	4.31
Retractable landing gear mechanism.....	0	0	0	0	0	0
Wheels, tires and brakes.....	5.13	7.20	6.67	5.56	7.37	6.21
Pontons or boats.....	0	0	0	0	0	0
Fuselage, engine mount, and fittings.....	7.69	4.00	6.67	0	0	4.31
Tail wheel assembly.....	0	4.00	0	0	0	.86
Miscellaneous.....	0	0	0	0	0	0
Undetermined.....	0	0	0	0	0	0
Total structural failures.....	23.08	19.20	20.00	5.56	7.37	16.55

TABLE D.—Comparative Figures in Analysis of Causes of Accidents Occurring in Domestic Scheduled Air Carrier Operations for the January-June Periods for the Years 1936 Through 1940—Continued

	January-June 1936	January-June 1937	January-June 1938	January-June 1939	January-June 1940 <sup>1</sup>	Average for the five periods
CAUSES—continued						
Material—Continued.						
Handling qualities.....	0	0	0	0	0	0
Instrument.....	0	0	0	0	0	0
Total airplane failures.....	37.18	23.20	33.33	18.89	14.48	27.11
Miscellaneous:						
Weather.....	7.05	20.40	26.67	5.55	12.37	13.10
Darkness.....	0	0	0	0	2.11	.34
Airport, terrain or water.....	8.97	16.00	6.67	11.11	7.89	10.35
Other.....	5.13	9.20	0	16.67	5.26	7.16
Total miscellaneous causes.....	21.15	45.60	33.34	33.33	27.60	30.95
Undetermined and doubtful.....	0	12.00	0	0	0	2.59

<sup>1</sup> Two foreign scheduled air carrier accidents, one caused by power plant failure-fuel system and the other by airport, terrain or water are not included in these statistics.

TABLE D1.—Comparative Figures in Analysis of Causes of Accidents Occurring in Domestic Nonscheduled Air Carrier Operations for the January-June Periods for the Years 1936 Through 1940

[Causes of accidents indicated in percentages]

	January-June 1936	January-June 1937	January-June 1938	January-June 1939	January-June 1940	Average for the 5 periods
Number of accidents involved.....	12	6	5	2	5	6
CAUSES						
Personnel:						
Pilots:						
Error of judgment.....	8.33	0	0	0	0	3.33
Poor technique.....	0	33.33	22.00	0	4.00	11.00
Carelessness or negligence.....	42.50	33.33	2.00	0	20.00	27.34
Miscellaneous.....	8.34	0	0	0	0	3.33
Total pilot errors.....	59.17	66.66	24.00	0	24.00	45.00
Other personnel:						
Supervisory.....	0	0	0	0	4.00	.67
Miscellaneous.....	0	0	0	0	20.00	3.33
Total personnel errors.....	59.17	66.66	24.00	0	48.00	49.00
Material:						
Power plant:						
Fuel system.....	7.50	0	0	0	0	3.00
Engine structure.....	0	0	0	0	20.00	3.33
Total power-plant failures.....	7.50	0	0	0	20.00	6.33
Structural:						
Wheels, tires, and brakes.....	0	16.67	38.00	0	0	9.67
Handling qualities.....	0	0	20.00	0	0	3.33
Total airplane failures.....	7.50	16.67	58.00	0	20.00	19.33
Miscellaneous:						
Weather.....	8.33	0	18.00	100.00	32.00	18.34
Airport, terrain or water.....	25.00	16.67	0	0	0	13.33
Total miscellaneous causes.....	33.33	16.67	18.00	100.00	32.00	31.67

## Stanton

(Continued from page 473.)

flier, he has been associated with Government agencies dealing with civil aviation since his discharge from the army on December 17, 1918.

First he was a test pilot for the air-mail service of the Post Office Department, then division superintendent, superintendent of supplies and repairs, and superintendent of operations. During this period in the infancy of civil aviation, he participated in the first

installations of such pioneering ventures as all-weather runways and rotating beacons.

After an interval of 4 years in the engineering business, he returned to the aeronautics branch of the Department of Commerce as one of its first airplane and engine inspectors, but was transferred almost immediately to the Airways Division. Throughout the 12 years since, he has played a major role in the development of today's 28,000-mile network of Federal airways.

Mr. Stockburger is 52, a native of Arkansas and a mechanical engineer who

specialized in gas engines. A Signal Corps lieutenant during the World War, he helped to work out the first telephonic communication between an airplane and the ground.

Moving to California in 1924, he became successively city manager of South Pasadena, Alhambra, and Ventura. He was director of finance, State of California, from 1934 until early in 1939, when his connection with the city of Los Angeles began.

His experience in public administration includes service on many State commissions in California.

# AIR SAFETY

## Avoid Loose Control Sticks, Civil Aeronautics Board Urges

*Bulletin Outlines Several Air Accidents Due to Improperly Fastened Control Sticks; Many Mistakes Caused by Negligence*

As another step in its "Campaign Against Crashes," the Civil Aeronautics Board has issued a bulletin which discusses air accidents caused by loose or improperly fastened control sticks. The bulletin outlines six individual crashes, each of which was caused by malfunctioning of the controls.

These accidents are avoidable, and occur from a variety of mistakes, all of them due to negligence, the Board states, and urges pilots to make certain, prior to every flight, that control sticks are properly installed, and in good working order. The full text of the bulletin follows:

**LOOSE CONTROL STICKS ARE INEXCUSABLE.**—In the category of absolutely avoidable airplane accidents each year are found too many due to loose or improperly fastened control sticks. These accidents occur from a variety of mistakes, all of them due to negligence. To name a few on record:

1. There was the plane which nosed over on a landing because someone, in removing the bolt holding the stick in its socket, had disconnected an elevator cable and forgotten to replace it.
2. There was the student solo who cracked up on landing when his rear stick pulled out because a holding pin had not been in its proper place. (This fellow, incidentally, thought quickly. He bounced high on a wheel landing, pushed full throttle, and grabbed the front stick but crashed because he stalled in too steep a climb.
3. Last May, out in the Northwest, a pilot was seriously injured because the controls jammed on take-off. The jam occurred, apparently, because the holding pin was not in place on the

stick. Uncontrolled, the airplane struck the ground in a turn.

4. Because a stick was not properly "safetied" and pulled out of its socket on a take-off, a pilot was injured at Charlestown, S. C., last spring.
5. During an exhibition performance at an airmeet at Greensboro, N. C., a control stick became loosened because the fastening bolt had been removed. Uncontrolled, the airplane struck the ground on its nose shortly after take-off.
6. Just last summer an instructor was severely cut and bruised in an accident near Fort Leavenworth, Kans., which resulted from lack of a bolt in the rear stick.

In most cases the pilots were seriously injured and extensive damage was sustained by the aircraft. All these accidents were avoidable.

**REMEMBER OWNERS AND PILOTS:** Avoid that Fifth Columnist—*Negligence*. A loose or improperly fastened control stick opens the door for the subversive element—*Gravity*. And through its agents Drag and Weight, Gravity seizes control from the pilot. *Make certain, prior to every flight, that control sticks are properly installed and in good working order.*

Following are additional reports on individual crashes. These reports list the probable causes, contributing factors, and in many cases, comments as to how the accidents might have been avoided.

**FUEL LINE FAILURE CAUSES STUDENT ACCIDENT.**—Engine failure following take-off, brought about by a broken fuel line, resulted in a crash and serious injuries to student pilot Robert M. Burke near Bristol, Conn., on April 9. Burke had been executing practice landings in a 55-horsepower Taylorcraft. On a take-off, the engine backfired and stopped completely because of a broken fuel line. He crashed after banking to the left to avoid landing on brush-covered terrain beyond the field boundary. The student's instructor stated a safe landing could have been made straight ahead with little or no damage to the plane.

**Probable cause.**—Engine failure following take-off.

**Contributing factor.**—Inexperience of the pilot, causing him to fail to make a quick estimate of the situation and select the best possible area for a forced landing.

**FOUR INJURED AS ENGINE FAILS DUE TO FAILURE TO CHECK VALVES.**—Retarded fuel feed caused an engine failure following take-off and resulted in injuries to three sightseers, Marvin Marcadica, James Marino, and Peter Niclois, and serious injuries to pilot Edwin W. Wormald at Floyd Bennett Field, N. Y., on June 13. Wormald had taken the three passengers aloft for a local flight but as the aircraft reached a 150-foot altitude, the engine failed. He landed the plane straight ahead on the surface of the water adjoining the airport and the passengers were rescued by a small boat. Subsequent investigation of the aircraft showed the valve to the right wing tank to be "off" while the valve to the left wing tank was partially "open." The plane was a Stinson SR-5E.

**Probable cause.**—Engine failure following take-off, necessitating a forced landing.

**Contributing factor.**—Failure of the pilot to turn fuel valve to the "full on" position.

**Comment to student pilots.**—Note that when the engine failed on take-off, this pilot followed the good practice of continuing ahead. Fuel valves should always be checked before take-off.

**PILOT KILLED AS DUSTING PLANE STRIKES TREE.**—Failure of commercial pilot John G. McKeehan to avoid a tree while engaged in crop-dusting operations near Palmetto, Fla., on May 18 resulted in a crash, with fatal injuries to the pilot. Pilot McKeehan had been dusting a tomato crop in a Travelair 4000 and had put his plane into a steep climbing attitude near the end of the field. His left wing was sheared off as it struck a palmetto tree during the maneuver. The aircraft continued upward in a half roll until it stalled and fell to the ground on its nose. Subsequent investigation disclosed that the aircraft's certificate of airworthiness had expired.

**The probable cause.**—Failure of the pilot to avoid an obstruction while flying at a dangerously low altitude.

**LOOSE CONTROL STICK CAUSES SERIOUS INJURY.**—A loose control stick jammed after take-off and brought serious injuries to Fred Christopher Lyons, private pilot, and his passenger, Robert A. Vandervert, in a crash at Felts Field, Spokane, Wash., on May 12. Lyons had taken off with his passenger on a local flight in his Luscombe 8-A. Immediately after take-off, the left wing dipped about 20° and the aircraft

banked to the left, with the angle of dip progressively increasing until the wing was in a nearly vertical position after a half-circle turn. The plane then dropped to the ground in a left side slip, striking on its left wing, cart-wheeling over its nose and coming to rest on its right wing, demolished. Subsequent investigation showed that the right control stick securing bolt was not in place, allowing that stick to jam against the right side.

**Probable cause.**—Aileron control movement restriction caused by an unfastened control stick becoming jammed against the side of the fuselage.

**Contributing factor.**—Carelessness on the part of the person or persons responsible for the maintenance of the aircraft for failing to fasten the control stick in its socket.

#### LOW ALTITUDE STALL CAUSES CRASH.

A stall which developed during a gliding turn at low altitude caused an accident at Gardena, Calif., on April 13 in which student pilot Jay F. Moody was seriously injured. On the day of the accident, Moody approached the Gardena Valley Airport for a landing after having completed a half-hour of solo practice flight. After he had closed the throttle to glide in for his landing, he became apprehensive of the engine temperature reading of 185° and although he realized that he had misjudged his landing and would overshoot the airport, he failed to apply power to climb around for another try. Instead he went into a gliding turn, from which the airplane spun in on its nose and right wing. The plane was a 50-horsepower Porterfield. Considering that the ground temperature at the time of the accident was 97°, the recorded engine temperature was within the safe limits of engine operation.

**Probable Cause.**—Student pilot stalled the aircraft while executing a gliding turn at low altitude.

**Contributing Factor.**—Inexperience of the pilot.

#### PILOT LOSES CONTROL SHOUTING TO FARMER; TWO INJURED.

Losing control of his plane as he swooped low to ask directions from a farmer, student pilot Merle H. Weible met with an accident near Faribault, Minn., about 3:00 P. M. on July 1, which resulted in serious injuries to himself and his passenger-wife. Weible became confused as to his bearings while flying cross-country and glided low over a field, asking directions of a farmer. Just as the farmer replied, by pointing in the direction of the airport, Weible attempted a steep turn and lost control. The plane slipped to the ground from an altitude of approximately 50 feet and was demolished.

**Probable Cause.**—Pilot lost control of aircraft while attempting a steep turn at a dangerously low altitude.

**Contributing Factor.**—Inexperience of pilot.

**Comment.**—It's safer to drop a note. Steep turns at low altitude are dangerous especially to pilots of little experience.

## New Accident Reporting Procedure Announced

In order that all pertinent information regarding aircraft accidents be made available and the responsibility for such accidents determined as nearly as possible, the General Inspection Section of the Civil Aeronautics Administration has instructed its field representatives that in all accident cases, particularly those involving violations, information must be filed on each person even remotely connected with any phase of activity which might have had a bearing on the result.

It is the intention of the Safety Bureau of the Civil Aeronautics Board to take cognizance of all actions by any persons, either certificated or uncertificated, which may have a bearing on the safety of aircraft operations, particularly

where an accident, or violation of regulations which might lead to an accident, is involved.

The Safety Bureau intends to act on such information and carry on a campaign of education tending to secure cooperation of all parties even remotely concerned in such instances in the interests of the furtherance of safety.

The records show that a large proportion of the mounting total of accidents is due to carelessness and lack of a feeling of fixed responsibility in the case of many individuals. Many others are due to willful disobedience and violation of the regulations. It is felt by the Safety Bureau and the General Inspection Section that every step possible to reduce this rapidly increasing total of accidents must be taken promptly and pursued through all possible ramifications.

(See Accident Procedure, page 485)

## September Safety Report:—

**Air Carriers Fly 9,000,000 Revenue Miles Without Incident; Private Flying Fatal Accidents Total 31; Total Pilots Gain**

During September the Nation's airlines flew approximately 9,000,000 revenue miles and carried approximately 250,000 revenue passengers without an unusual incident, the Civil Aeronautics Board reported.

In issuing its monthly summary of civil aviation accidents, the Board revealed that there were 31 fatal accidents in nonairline, or private flying. In September 1939, there were 19 such accidents. On the other hand, the Board pointed out, there were 25,800 more private fliers (including students) in September than there were in the same month of 1939.

The following figures compare fatal accidents which occurred during September 1939 and 1940:

Nonair carrier		No. of pilots	Air carrier		Total	
CPT	Non-CPT		Foreign	Domestic		
Sept. 1940	1	30	84,500	0	0	31
Sept. 1939	0	19	58,701	0	0	19

<sup>1</sup> This figure includes all student pilots, but does not include airline pilots.

As can be seen from the statistical table, most fatal accidents occurred in the noncontrolled flying group. In September there were 67,500 in this noncontrolled group and 17,000 in the controlled, of CPT group. In September 1939, there was 1 fatal accident to every 3,155 persons engaged in private flying. In September this year, there was 1 fatal accident to every 2,779 private fliers.

The Board explained that it is not satisfied with the existing safety record.

Of the 31 accidents which occurred during September, over 50 percent could have been avoided easily by attention to maintaining adequate flying speed as a protection against stalls and spins; being cautious when near revolving propellers; and remaining on the alert for obstructions to flight; such as trees and high-tension wires.

Analysis of private-flying accidents during September 1940:

Cause	Student		Pleasure		Commercial airport	Other	Undetermined status	Total
	Solo	Dual	Local	X-country				
Spins-stalls <sup>1</sup> .....	3	2	7	1	1	0	0	14
Struck trees <sup>1</sup> .....	0	0	1	1	0	0	0	2
Tow cable collided with high tension wires <sup>2</sup> .....	0	0	1	0	0	0	0	1
Struck high-tension wires <sup>1</sup> .....	0	0	1	0	0	0	0	1
Power plant.....	1	1	1	0	0	0	0	3
Structure.....	0	0	0	0	1	0	0	1
Propeller accident.....	0	0	1	0	0	1	0	2
Suicide.....	0	0	0	0	0	1	0	1
Other.....	0	0	0	0	0	1	0	1
Undetermined, currently.....	0	0	1	0	0	0	4	5
<b>Total.....</b>	<b>4</b>	<b>3</b>	<b>13</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>31</b>

<sup>1</sup> With one exception, all caused by pilot error.

<sup>2</sup> Glider—accident caused by faulty release mechanism for the tow line.

As the Board issued its report, it also cautioned all private fliers to watch out for the hazards that shorter days and colder weather bring during the fall and winter months. Pilots, it said, should keep in mind safety rules for cold weather engine performance and should not attempt flights late in the day without adequate experience and equipment for night flying.

# Airways and Airports

## Major Clay Named Secretary of Airport Approval Board

**C. A. A. Airport Section Detached from Federal Airways Service and Will Operate as Independent Unit Directly with Administrator**

The Airport Approval Board, consisting of the Secretaries of War, Navy, and Commerce, charged with responsibility for location of sites to be constructed or improved under the recent \$40,000,000 national defense airport appropriation by Congress, has designated Maj. Lucius D. Clay, Corps of Engineers, United States Army, as its secretary. Major Clay has established offices in the Commerce Building adjoining the Civil Aeronautics Administration.

Col. Donald H. Connolly, Administrator of Civil Aeronautics, announced that in order to expedite the construction program, the Airport Section under Maj. A. B. McMullen has been detached from the Federal Airways Service and will operate as an independent unit directly with the Administrator and with Major Clay.

Colonel Connolly pointed out that provisions of the appropriation act limit the expenditure of the \$40,000,000 airport fund to not more than 250 sites deemed most important to national defense by the priority board.

He said that the Civil Aeronautics Administration is now engaged in a detailed study of airport projects before it, in conjunction with the Army and Navy, and that at least 30 days will be required to develop data in proper form for consideration by the approval board composed of the three Secretaries.

Most of the required data are already on file, Major Clay said, but where information is regarded as insufficient, representatives will visit prospective locations for further facts within 30 days. He warned, however, that such visits constitute no assurance that the specific projects will be included in this year's program.

It is expected that, after the detailed facts have been presented to the approval board, the defense locations can be determined in time for a considerable portion of the work, both by contract and force account, to be under way by the opening of the new year.

Colonel Connolly said that information about individual projects may be obtained by correspondence with the secretary of the approval board, in care of the Administrator of Civil Aeronautics.

Major Clay, an officer of the Corps of Engineers and a West Point graduate in the class of 1918, has been engaged in construction operations during most

of the past 15 years. His last detail before becoming secretary to the priority board was construction of the \$55,000,000 Red River Dam at Denison, Tex. Previously, he had spent 1937 and 1938 as advisor to the Philippine Government on hydroelectric projects.

## Schools Issued Air Agency Certificates

Aerocademy, Capitol Airport, Bladensburg, Md., approved September 18, 1940, as a Primary Flying School (private).

Aircraft Associates, Inc., Municipal Airport, Long Beach, Calif., approved August 22, 1940, as an Advanced Flying School (private and commercial).

Alabama Air Service, Box 750, Auburn, Ala., approved September 18, 1940, as an Advanced Flying School (private and commercial).

Allen School of Aeronautics, State Airport, Hills Grove, R. I., approved September 19, 1940, as a Primary Flying School (private).

Beacon Flying Service, Inc., Genesee and Union Rds., Cheektowaga, N. Y., approved October 2, 1940, as an Advanced Flying School (private and commercial).

Bennett Air Service, 134 8th St., Idaho Falls, Idaho, approved October 2, 1940, as a Primary Flying School (private).

Cal-Aero Corp., Ontario Branch, Ontario, Calif., approved September 18, 1940, as a Primary Flying School (private).

Fayette Airways, Inc., 529 Fayette Title and Trust Bldg., Uniontown, Pa., approved September 19, 1940, as an Advanced Flying School (private and commercial).

Gage Flying Service, Compton Airport, Compton, Calif., approved September 19, 1940, as an Advanced Flying School (private and commercial).

Guiney Flying Service, Coatesville Airport, Coatesville, Pa., approved October 17, 1940, as a Primary Flying School (private).

Hartung Aircraft Corp., 104½ Mile Rd. and Gratiot, Roseville, Mich., approved October 10, 1940, as an Advanced Flying School (private and commercial).

Kalspell Flying Service, Kalspell, Mont., approved October 10, 1940, as a Primary Flying School (private).

William E. Martin Flying Service, Concord Municipal Airport, Concord, N. H., approved October 2, 1940, as a Primary Flying School (private).

Missouri Institute of Aeronautics, Sikestown, Mo., approved September 27, 1940, as an Advanced Flying School (private and commercial).

Morton Air Service, Inc., Hangar 3, Los Angeles Municipal Airport, Los Angeles, Calif., approved August 2, 1940, as a Primary Flying School (private).

Narragansett Aviation Service, Inc., Rhode Island State Airport, Hills Grove, R. I., approved August 12, 1940, as a Primary Flying School (private).

Page Airways, Inc., Scottsville Rd., Rochester, N. Y., approved October 24, 1940, as an Advanced Flying School (private and commercial).

Palmetto Air School, Inc., Municipal Airport, Spartanburg, S. C., approved October 2, 1940, as an Advanced Flying School (private and commercial).

Parkersburg Flying Service and Aviation School, Parkersburg Airport, Parkersburg, Pa., approved September 18, 1940, as a Primary Flying School (private).

Peninsula Airways, Inc., 118 N. Lincoln, Port Angeles, Wash., approved September 26, 1940, as a Primary Flying School (private).

Rankin School of Aeronautics, Inc., Post Office Box 170, Van Nuys, Calif., approved August 30, 1940, as an Advanced Flying School (private and commercial).

Regan Flying Service, Box 946, Shawnee, Okla., approved October 10, 1940, as an Advanced Flying School (private and commercial).

Richmond Air Transport & Sales Corp., Byrd Airport, Richmond, Va., approved October 17, 1940, as an Advanced Flying School (private and commercial).

Southern Air Lines, Inc., P. O. Box 476, Milledgeville, Ga., approved August 22, 1940, as an Advanced Flying School (private and commercial).

Kenneth Starnes Flying Service, Municipal Airport, Conway, Ark., approved August 27, 1940, as an Advanced Flying School (private and commercial).

Stevens Flying Service, Windsor Mill Rd., Woodlawn, Md., approved October 12, 1940, as an Advanced Flying School (private and commercial).

Strachan Skyways, Inc., Municipal Airport, Savannah, Ga., approved August 2, 1940, as a Primary Flying School (private).

Swaby School of the Air, Municipal Airport, Columbus, Ga., approved October 9, 1940, as a Primary Flying School (private).

Tennessee Aero Corp., Municipal Airport, Nashville, Tenn., approved September 19, 1940, as an Advanced Flying School (private and commercial).

Roscoe Turner Aeronautical Corp., Municipal Airport, Indianapolis, Ind., approved August 6, 1940, as an Advanced Flying School (private and commercial).

United Flying Schools of America, Inc., 729 Citizens National Bank Bldg., Los Angeles, Calif., approved August 19, 1940, as an Advanced Flying School (private and commercial) in conjunction with Aero Industries Technical Institute, Inc.

Vincent Aeronautical, New Orleans Airport, New Orleans, La., approved September 27, 1940, as an Advanced Flying School (private and commercial).

West Virginia Air Service, Inc., County Airport, Clarksburg, W. Va., approved September 19, 1940, as an Advanced Flying School (private and commercial).

E. W. Wiggins Airways, Inc., Boston Municipal Airport, E. Boston, Mass., approved October 2, 1940, as an Advanced Flying School (private and commercial).

## Changes in List of Flying Schools Issued Air Agency Certificates

Change Floyd Bennett Flying School, Brooklyn, N. Y., to an Advanced Flying School (private and commercial) in conjunction with School of Education, New York University, 34 Stuyvesant St., New York, N. Y.

Change Bridgeport Flying Service, Inc., 1250 Fairfield Ave., Bridgeport, Conn., to an Advanced Flying School (private and commercial).

Change Brinckerhoff Flying Service, Inc., College Park Airport, College Park, Md., to an Advanced Flying School (private and commercial).

Change Cape Aircraft, Inc., Falmouth Airport, Hatchville, Mass., to an Advanced Flying School (private and commercial).

Change Deane Flying School, Hangar 5, Floyd Bennett Field, Brooklyn, N. Y., to an Advanced Flying School (private and commercial), in conjunction with School of Education, New York University, New York, N. Y. (ground).

Delete Carl Evers Flying Service, Brooklyn, N. Y. Change Lynchburg Air Transport & Sales Corp., Preston Glenn Airport, Lynchburg, Va., to an Advanced Flying School (private and commercial).

Change Morton Air Service, Inc., Hangar 3, Mines Field, Inglewood, Calif., to an Advanced Flying School (private and commercial), and change name of ground school to in conjunction with Airport Ground Schools, Inc., Hollywood, Calif.

Change Municipal Flying Service, Floyd Bennett Field, Hangar 7, Brooklyn, N. Y., to an Advanced Flying School (private and commercial).

Change Pacific Aeronautical College, Los Angeles Municipal Airport, Inglewood Calif., to an Advanced Flying School (private and commercial).

Change Reich Air Service, Inc., Roosevelt Field, Garden City, N. Y. to an Advanced Flying School (private and commercial), in conjunction with School of Education, New York University, New York, N. Y.

Change Carl Stengel Flying Service, Box 352, Gainesville, Fla., to an Advanced flying School (private and commercial).

# Manual Prescribes Standards for "True Light" Operation

C. A. A. Publication Explains Meaning of the Phrase and Sets Forth Conditions for Authority to Maintain

A Manual prescribing the standards for the issuance of lawful authority to operate a "true light" and issuance of air navigation facility and rating has been prepared by the Civil Aeronautics Administration.

Purpose of the manual is to explain the meaning of the phrase "true light" as used in the Air Commerce Act of 1926 and the Civil Aeronautics Act of 1938 and to set forth conditions upon which authority for the operation of such lights will be granted. All air navigation facilities which fall within the phrase "true light" may obtain Air Navigation Facility Certificates of Rating provided for in section 606 of the Civil Aeronautics Act of 1938.

The rapid development of flying makes it important that aeronautical lights be operated from sunset to sunrise for their service to air navigation to be complete. There has been found a growing concern among pilots flying at night that, where beacon and boundary lights are advertised as being available on request, the dependability of such

<sup>1</sup> A "true light" is any rotating or flashing illuminated beacon or combination of such beacons which is similar to those operated along civil airways by the Administrator of Civil Aeronautics and which is established, maintained, exhibited, or operated as an aid to air navigation.

operation is not sufficient to insure the desired safety in air commerce.

Moreover, the large private contribution to safety in air commerce, evidenced by the voluntary display of hazard lights operated on a nightly schedule from sunset to sunrise, fully justifies the cooperation of private aeronautical interests to further safety by the assurance of dependable nightly operation of the lighting equipment on a nearby airport.

It is hoped that this manual and the enforcement of the conditions set forth therein regarding the operation of aeronautical lights will aid materially in alleviating this situation. This procedure was made necessary because of the increase in flying activity which has made it essential for safety that only accurate and dependable information on the operation of all aeronautical lights be disseminated to airmen by the Civil Aeronautics Administration.

Inquiries on conditions governing the use and operation of lights and requests for application forms for an Air Navigation Facility Certificate of Rating may be directed to the nearest regional office of the Civil Aeronautics Administration or to the Administrator of Civil Aeronautics, Washington, D. C.

## AIR NAVIGATION FACILITIES ON NOV. 1, 1940

### AIRPORTS

Municipal airports <sup>1</sup> .....	687
Commercial airports <sup>2</sup> .....	493
Civil Aeronautics Authority intermediate fields <sup>3</sup> .....	282
Army airdromes <sup>4</sup> .....	68
Naval air stations <sup>5</sup> .....	20
Marked auxiliary fields <sup>6</sup> .....	662
Private fields <sup>7</sup> .....	125

<b>Total</b> .....	<b>2,337</b>
Airports and landing fields having any night lighting equipment:	
Municipal.....	301
Commercial.....	92
Intermediate.....	282
Army.....	37
Navy.....	13
Auxiliary.....	32
Private.....	9
<b>Total</b> .....	<b>766</b>

### SEAPLANE BASES

Army, Navy, Coast Guard.....	29
Other seaplane bases and anchorages.....	294
<b>Total</b> .....	<b>323</b>
Seaplane bases having any night lighting equipment:	
Navy and Coast Guard.....	5
Other bases and anchorages.....	9
<b>Total</b> .....	<b>14</b>

### RADIO AIDS

Ranges.....	280 (2 in Hawaii) (4 in Alaska)
Range stations, simultaneous with voice.....	182 (4 in Alaska)
Range stations, nonsimultaneous with voice.....	81
Range stations, no voice.....	17 (2 in Hawaii)
Broadcast stations.....	113 (7 in Alaska)
Broadcast stations, simultaneous.....	108 (4 in Alaska)
Broadcast stations, nonsimultaneous.....	5 (3 in Alaska)
Marker stations.....	42
Fan markers.....	103
Voice only.....	14 (8 in Alaska)

<sup>1</sup> Municipally operated, servicing available.

<sup>2</sup> Privately operated, servicing available.

<sup>3</sup> Operated by C. A. A., no servicing available.

<sup>4</sup> Army operated, open to service planes only.

<sup>5</sup> Navy operated, open to service planes only.

<sup>6</sup> Limited area, no servicing.

<sup>7</sup> Privately operated, no servicing.

## Repair Stations Issued Air Agency Certificates

American School of Aircraft Instruments, 3903 San Gerardo Rd., Glendale, Calif. approved October 29, 1940, for repair of instruments.

Aircraft Development Co., 1530 Olive St., NE, Washington, D. C., approved October 16, 1940, for repair of aircraft welded steel tube structure; not including fittings; steel fittings; and aircraft assembly.

Aviation Sales & Service, Peter O. Knight Airport, Tampa, Fla., approved October 17, 1940, for repair of aircraft welded steel tube structure, not including fittings; aircraft wooden structure not including box and laminated spars, wood covered fuselages, wings, or control surfaces; aircraft fabric covering; aircraft steel fittings; aircraft aluminum alloy structure, not including fittings; aircraft assembly; and aircraft engines.

Herbert L. Budd, Felts Field, Parkwater, Wash., approved September 27, 1940, for repair of welded steel tube structure, excluding fittings; wooden structure, including box and laminated spars, wood covered fuselages, wings, and control surfaces; fabric covering; steel fittings; assembly; and wooden propellers.

Canadian Colonial Airways, Inc., New York Municipal Airport, LaGuardia Field, Jackson Heights, N. Y., approved October 23, 1940, for repair of aircraft welded steel tube structure, not including fittings; aircraft steel fittings; aircraft aluminum alloy structure, not including fittings; aircraft aluminum alloy fittings; and assembly.

Narragansett Aviation Service, Inc., Rhode Island State Airport, Hills Grove, R. I., approved September 27, 1940, for repair of welded steel tube structure, excluding fittings; wooden structure, excluding box and laminated spars, wood covered fuselages, wings, and control surfaces.

Northwest Airlines, Inc., Wold-Chamberlain Field, Minneapolis, Minn., approved October 16, 1940, for repair of aircraft welded steel tube structure, not including fittings; aircraft fabric covering; aircraft steel fittings; aircraft aluminum alloy structure, not including fittings; aircraft aluminum alloy fittings; aircraft assembly; and aircraft instruments.

Northwest Airlines, Inc., St. Paul Municipal Airport, Holman Field, St. Paul, Minn., approved October 16, 1940, for repair of aircraft welded steel

tube structure; aircraft wooden structure; aircraft wood covered fuselages, wings, and control surfaces, and box and laminated spars; aircraft steel fittings; aluminum alloy structure; aircraft aluminum alloy fittings; aircraft assembly; aircraft aluminum alloy propeller blades, steel hubs; aircraft wooden propellers; aircraft engines.

Pan American Airways, Inc., Isla Grande Airport, San Juan, P. R., approved September 27, 1940, for repair of welded steel tube structure; fabric covering; steel fittings; aluminum alloy structure; aluminum alloy fittings; and assembly.

A. W. Whitaker Aircraft Sales & Service, Portland Airport, Portland, Oreg., approved September 27, 1940, for repair of welded steel tube structure; wooden structure excluding box and laminated spars, wood covered fuselages, wings, and control surfaces; fabric covering; steel fittings; and assembly.

## Changes in List of Repair Stations Issued Air Agency Certificates

Delete Commercial Aircraft Co., Inc., Swan Island Airport, Portland, Oreg.

Hadley Aircraft, Inc., Hadley Airport, New Brunswick, N. J., approved for repair of aluminum alloy structure; and aluminum alloy fittings.

Houlton Municipal Airport, Houlton, Maine..... Oct. 7, 1940

Buffalo Launch Club Seaplane Anchorage, Buffalo, N. Y..... Oct. 16, 1940

## RECOGNIZED DEALERS

The Coast and Geodetic Survey has announced the addition of the following names to the list of dealers authorized to sell aeronautical charts:

Airmen's Specialty Co., 200 Hendrick Boulevard, Wink, Tex.

W. D. Tipton, Lessee, Curtiss-Wright Airport, Smith and Greenspring Avenues, Baltimore, Md.  
Oklahoma City Air Terminal, Oklahoma City, Okla.

## Airport Projects Approved

In accordance with the provisions of section 303 of the Civil Aeronautics Act, the Administrator of Civil Aeronautics has issued certificates of air navigation facility necessity, authorizing the expenditure of Federal funds in the operation of the following projects:

HUNTSVILLE, TEX.—\$16,350 for W. P. A. project including the development of five landing strips 500 feet in width and from 1,800 to 2,400 feet in length, to comprise an all-over landable area, the erection of a hangar, and affiliated work. The items of construction to be accomplished involve earth moving, finish grading, erection of fence and boundary markers, and construction of a frame hangar with office lean-to at Sam Houston State Teachers College Air Training Center.

INDIANAPOLIS, IND.—\$10,128 for N. Y. A. project performed in and around experimental building of the Civil Aeronautics Administration and will consist of carpentry; painting; drafting; landscaping; electrical and radio installation and test work at municipal airport.

(Continued on page 485)

# Manufacturing and Production

## Production

(Continued from page 473.)

On a percentage basis, the output of planes in the next engine classification—71-100 horsepower—even exceeded the previous group. During the 9 months of this year, production of this type of airplane was 702 units, a 232.2 percent increase over the 211 units produced in the first 9 months of last year.

TABLE I.—Domestic Civil Aircraft Production by Types

	January—September	
	1940	1939
<b>Landplanes:</b>		
1-2 place:		
Single engine.....	3,631	2,247
Multiengine.....	2	2
3-5 place:		
Single engine.....	734	314
Multiengine.....	8	5
6-20 place: Multiengine.....	21	14
22 place and over: Multiengine.....	93	46
<b>Seaplanes:</b>		
Single engine.....	17	32
Multiengine.....	0	8
<b>Ambibians:</b>		
Single engine.....	1	0
Multiengine.....	1	0
Unclassified.....	35	30
<b>Total single engine.....</b>	<b>4,383</b>	<b>2,593</b>
<b>Total multiengine.....</b>	<b>125</b>	<b>75</b>
<b>Grand total.....</b>	<b>4,543</b>	<b>2,698</b>

TABLE II.—Domestic Civil Aircraft Production by Engine Horsepower

	January—September	
	1940	1939
<b>50 horsepower and under:</b>		
Single engine.....	317	1,229
Multiengine.....	1	1
<b>51-70 horsepower:</b>		
Single engine.....	3,031	957
<b>71-100 horsepower:</b>		
Single engine.....	702	211
<b>101-165 horsepower:</b>		
Single engine.....	117	97
<b>166-225 horsepower:</b>		
Single engine.....	136	5
Multiengine.....	8	1
<b>226-300 horsepower:</b>		
Single engine.....	26	65
<b>301-600 horsepower:</b>		
Single engine.....	52	29
Multiengine.....	9	14
<b>601-1,800 horsepower:</b>		
Single engine.....	2	0
Multiengine.....	107	59
Unclassified.....	35	30
<b>Total single engine.....</b>	<b>4,383</b>	<b>2,593</b>
<b>Total multiengine.....</b>	<b>125</b>	<b>75</b>
<b>Grand total.....</b>	<b>4,543</b>	<b>2,698</b>

Largest percentage increase of all engine classifications was shown in the 166-225 horsepower group. The gain in output of this type was from only 5 in the 1939 period to 136 this year, an increase of 2,620 percent.

In multiengine planes of 601-1,800 horsepower, which includes the air transport type, the 1940 production was 107 units, a 140.7 percent increase over the 1939 period.

Classified according to weight, the figures show a gain in production of a heavier type of light plane and a corresponding decrease in output of the lightest type of aircraft.

During the period of 1940 under review, production of class IIs planes (those weighing from 1,300-4,000 pounds, having a single engine) was 1,382 units. Compared with the 1939 three-quarters production of 382 units, this represents an increase of 261.8 percent. The production this year of 2,939 planes in class I (those weighing not more than 1,300 pounds) compares with 2,182 in the like period of 1939.

Following are statistics showing the domestic civil aircraft production for the first 9 months of this year as compared

with the first 9 months 1939. Table I shows production by types; table II shows production by engine horsepower; and table III shows production by weight and engine classification.

TABLE III.—Domestic Civil Aircraft Production by Weight and Engine Classification

	January—September	
	1940	1939
Class I—not more than 1,300 pounds.....	2,939	2,182
Class IIS—1,300-4,000 pounds single engine.....	1,382	382
Class IIM—1,300-4,000 pounds multiengine.....	0	2
Class IIIS—4,000-10,000 pounds single engine.....	62	21
Class IIIM—4,000-10,000 pounds multiengine.....	18	14
Class IVS—10,000-25,000 pounds single engine.....	0	8
Class IVM—10,000-25,000 pounds multiengine.....	102	47
Class V—Gross excess—25,000 pounds.....	5	12
Unclassified.....	35	30
<b>Total.....</b>	<b>4,543</b>	<b>2,698</b>

## Aircraft Radio Equipment Approved for Scheduled Air Carrier Use

During the month of September the following units of aircraft radio equipment were approved by the Civil Aeronautics Administration for scheduled air carrier use and issued type certificates:

Certificate No.	Manufacturer	Unit	Date
443	RCA Manufacturing Co., Inc.....	AVA-56 Loop antenna (and adaptor kit).....	9-9
1345	Leair Avia Inc.....	ADF-8 Automatic direction-finder receiver.....	9-24
1346	.....	ADF-8 Automatic direction-finder control panel.....	.....
1347	.....	ADF-8 Loop and quadrantal corrector.....	.....
502	Western Electric Company.....	13A Transmitter.....	9-27

<sup>1</sup> Above certificates originally issued on April 26, 1940 with certain restrictions. Restrictions have been removed and new certificates reissued as of September 24, 1940.

The following authorized modifications to type certificates approving aircraft radio equipment for scheduled air carrier use were issued during September.

### LEAR AVIA INC.

Type certificate	Data sheet	Unit and modification	Modification authorized
346	328-A	ADF-8 Automatic direction-finder control panel. Addition and replacement of certain components to provide dial light dimming control.....	9-25

### TRANSCONTINENTAL & WESTERN AIR INC.

.....	.....	W4A Receiver. <sup>1</sup> Modification and replacement of certain components to effect improvement in the over-all selectivity, sensitivity and fidelity characteristics and the addition of dual audio output channels.....	9-18
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<sup>1</sup> The above equipment is not a certificated unit of radio equipment having been in scheduled air carrier use prior to the inception of type certification of such equipment.

## Accident Procedure

(Continued from page 481.)

In its instructions to field personnel, the General Inspection Section listed the following as illustrative of the Safety Bureau's desires in this regard:

**Example No. 1.**—A student pilot who is under the supervision of an instructor operates an aircraft not in condition for safe operation, which may or may not have resulted in an accident.

In this case, it is felt that the responsibility falls upon the student for taking off, on the instructor for permitting take-off, upon the mechanic who is responsible for the airworthy condition of the aircraft, upon the owner who is responsible for the operation of the aircraft, and upon the airport manager, since he is responsible for the operations on his airport even though he may have had no direct knowledge of the individual operation.

**Example No. 2.**—Reckless flying by a pilot, either habitual or occasional.

The pilot, regardless of the certificate held, is responsible for his actions whether or not in actual legal violation. The owner or operator of the aircraft, and the instructor, if any, are also responsible. The airport manager is responsible for the type of operations conducted on his airport. If the violator is a minor, the parents of the violator are responsible for his actions.

**Example No. 3.**—Carelessness or faulty workmanship by a mechanic.

The mechanic, of course, is responsible for his work and the airworthiness of aircraft under his charge, regardless of whether or not legal basis exists for filing a formal violation report. The repair station operator, or aircraft owner, is responsible for the acts of the mechanic in connection with aircraft under his care. The supervising mechanic is

responsible for the acts and adequacy of the work of subordinate mechanics. Airport officials are also responsible for any operation on their airports which might lead to unsafe operations.

## Airport Projects

(Continued from page 483)

**INDIANAPOLIS, IND.**—\$6,516 for N. Y. A. project to be performed on municipal airport property such as electrical repair and installation; building and repair of fences; construction; repair of parking area, cement repair and construction.

**IOWA CITY, IOWA.**—\$180,694 for W. P. A. project including grading and excavating, constructing concrete runways and turning circles; one black top runway; place blotter coat on existing runway; provide surface and subdrainage; install boundary cable and boundary lights; also runway lights at municipal airport.

**KAUAI, MOLOKAI, HILO, AND MAUI, HAWAII.**—\$265,991 for W. P. A. projects for construction involving 176,430 cubic yards of excavation and fill, 17,000 cubic yards of subbase rock and gravel, 83,090 square yards of finish grading, 103,831 square yards of paving, 20 acres of clearing and grubbing and quarrying, crushing, and hauling at Port Allen, Molokai, Maui, and Hilo Airports.

**KISSIMMEE, FLA.**—\$1,534 for N. Y. A. project including construction of standard 60- by 60-foot C. A. A.-type frame hangar at municipal airport.

**LONG BEACH, CALIF.**—\$19,900 for W. P. A. project including constructing administration building addition, connecting arcade and walks, installing utilities and operating facilities; altering existing buildings, removing sprinkler system, walks, and fences; excavating; grading; and performing appurtenant and incidental work at Long Beach Municipal Airport.

**MOBERLY, MO.**—\$129,680 for W. P. A. project for construction of an airport with three main runways, two taxiway approaches, a prefabricated hangar, including the production of all necessary fine and coarse aggregate to be used in this project only, and the performance of all incidental and appurtenant work necessary to accomplish and complete the project at Moberly Municipal Airport.

**NASHVILLE, TENN.**—\$126,903 for W. P. A. project for construction of hangar for the combined use of the 105th Observation Squadron, Tennessee National Guard and the United States Army Air Corps. Hangar will provide housing space for airplanes, storage space for repair shop. In addition to projects specifically approved at Nashville Municipal Airport.

**NORFOLK, VA.**—\$24,500 for W. P. A. project including completion of installation of 183 lighting fixtures, and addition of 96,970 square yards of road surfacing to the original proposal at municipal airport. In addition to projects specifically approved

**ORLANDO, FLA.**—\$2,536 for N. Y. A. project for construction of an airport for Orlando; to consist of clearing, grading, leveling, and surfacing of 65 acres of airport landing field area. Aeronautical features to be developed include construction of four landing strips, 1,850, 1,950, 2,250, and 2,350 feet in length, each 500 feet wide at auxiliary municipal airport.

**PORTLAND, MAINE.**—\$11,800 for W. P. A. project including widening safety strips on either side of NW-SE runway. Items of construction to be accomplished are grading safety bands and runways, paving runways and safety strips, providing drainage facilities, and performing appurtenant and incidental work at Portland Municipal Airport.

**PROVO, UTAH.**—\$3,210 for W. P. A. project including erection of a standard C. A. A. 60- by 60-foot frame hangar, extension of E-W runway 1,000 feet, completing of day boundary marker installation; improvement includes items of concrete and carpentry in hangar construction, grading involving 300 cubic yards of finish work, installation of 300 linear feet of French drain, grading a roadway to building area, and fabrication, painting and placing of markers at Provo City Municipal Airport.

**TONOPAH, NEV.**—\$184,770 for W. P. A. project including construction of one all-weather landing strip 6,700 feet in length and 500 feet in width, together with development of additional all-way landing area at Tonopah Airport.

## NEW AERONAUTICAL PUBLICATIONS

Among recent Government publications dealing with the subject of aeronautics are the following:

**STATE DEPARTMENT.—EXECUTIVE AGREEMENT SERIES 167;** certificates of air worthiness for export, between the United States of America and New Zealand. 17 pages, price 5 cents. Classification number 8 9.8: 167.

**STATE DEPARTMENT.—EXECUTIVE AGREEMENT SERIES 169;** military aviation mission, agreement between the United States of America and Chile. 8 pages, price 5 cents. Classification number 8 9.8: 169.

**SENATE EDUCATION AND LABOR COMMITTEE;** hearings on S. 4041, a bill to establish a Division of Aviation Education in the United States Office of Education, Federal Security Agency, and for other purposes. 32 pages, price 10 cents. Classification number Y 4. Ed 8/3 Av 5.

**NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS;** 25th annual report (for 1939), including technical reports nos. 645 to 680. 745 pages, illustrated, cloth, price \$2.50. Classification number Y 3.N 21/5: 1/939-2.

**MAPS;** transportation maps, showing railroads, highways, canals, air lanes, dredged channels and pipe lines; Georgia; highways corrected to June 1, 1939. (8 sheets to the set.) Price \$1.50 per set. Classification number A 22.9/2: G 9/sh 1-8.

**WAR DEPARTMENT; Air Corps Field Manual:** Air navigation. This manual is a general treatise on all methods and technique of air navigation and a brief summary of instruments and equipment used. 43 pages, illustrated, price 15 cents. Classification number W 1.33: 1-30.

**WAR DEPARTMENT; Technical Manual No. 1-230.** Weather manual for pilots. Gives information on air-mass analysis, atmosphere and air-mass properties, air movements, clouds, air masses and fronts, North American winter air masses, moist fronts and dry fronts, fog and low status, and thunderstorms, tornadoes, and dust-storms. 293 pages, illustrated, price 40 cents. Classification number W 1.35: 1-230.

**HOUSE POST OFFICE AND POST ROADS COMMITTEE;** hearings on H. R. 10091, relating to the transportation of foreign mail by aircraft (Part 2). 49 pages, price 10 cents. Classification number Y 4.P 84/1: A1 7/17/pt. 2.

**NAVY DEPARTMENT, UNITED STATES NAVAL OBSERVATORY;** American Nautical Almanac for the year 1941. The object of this publication is to provide the navigator, including the aerial navigator, with a compact publication containing all of the ephemeris material essential to the solution of problems of navigational movement. 318 pages, illustrated, chart, price 55 cents. Classification number N 11.6: 941.

**HOUSE EDUCATION COMMITTEE;** hearings on H. R. 9974, to establish a Division of Aviation Education in the United States, Office of Education, Federal Security Agency, and for other purposes. 48 pages, price 10 cents. Classification number Y 4. Ed 8/2: Av 5/2.

When ordering these publications, send remittance by postal money order, express order, coupons, or check to the Superintendent of Documents, Government Printing Office, Washington, D. C. Always give title, issuing office, or classification number when listed.

## Temporary Airport of Entry

Certain airports and seaplane bases are designated as airports of entry through which aircraft arriving in the United States from foreign countries may clear customs and immigration.

A complete list of such airports of entry appeared in the **CIVIL AERONAUTICS JOURNAL**, volume 1, No. 11, dated June 1, 1940. The following temporary airport of entry has been redesignated for another period of 1 year following the date given:

Airport	Date
Chalks Flying Service Seaplane Anchorage, Miami, Fla. . . . .	Sept. 17, 1940

## NEW TYPE APPROVALS

(Approval numbers and dates of assignment in parentheses)

### Type Certificates

#### Propellers

Hamilton Standard, 33D propeller, steel hub and aluminum-alloy blades, 11 ft. 6 in. to 9 ft. 6 in. diameter, hydraulically controllable pitch with 80° range, 1,200 h. p., 1,800 r. p. m. (749, Oct. 12, 1940.)

### New Models Added to Old Type Approvals

(Approval numbers and dates of approval of new models in parentheses)

#### Aircraft

Aerona, 65-TF, 2 place closed land monoplane. Engine, Franklin 4AC-150 Series A. (Type Certificate No. 728, Oct. 9, 1940.)

#### Appliances

Pacific Alaska Airways, skis, model GS-4, steel pedestal with spruce, birch, and hickory runner. Approved static load per ski 5,250 lbs. (Type Certificate No. 112, Oct. 10, 1940.)

#### Propellers

Hartzell, 829-B, wood, 6 ft. 5 in. diameter, 3 ft. 5 in. pitch, 50 h. p., 1,900 r. p. m. (Approved Type Certificate No. 530, Oct. 8, 1940.)

# CIVIL AERONAUTICS BOARD

## OFFICIAL ACTIONS



### Abstracts of Opinions, Orders, and Regulations

FOR THE PERIOD OCTOBER 15-31, 1940

#### ORDERS

**ORDER No. 694:** *Granted petition of State of Alabama to intervene in applications of various airlines for certificates of convenience and necessity.*

The Board on October 16 granted petition of the State of Alabama to intervene in the applications of Delta Air Corporation, Pennsylvania-Central Airlines Corporation, Southern Air Lines, Inc., Dixie Airlines, Inc., and Eastern Air Lines, Inc., for certificates of public convenience and necessity.

**ORDER No. 695:** *Revoked private pilot certificate held by William R. Petrone.*

The Board on October 18 revoked private pilot certificate No. 51669, held by William R. Petrone, Chicago, Ill., for piloting an aircraft acrobatically over a congested area at an altitude of less than 1,000 feet, and other violations of the Civil Air Regulations.

**ORDER No. 696:** *Revoked private pilot certificate held by Henry Morgan Smith.*

The Board on October 18 revoked private pilot certificate No. 46428, held by Henry Morgan Smith, Huntington, W. Va., for piloting an aircraft carrying a passenger who occupied a control seat in said aircraft without the dual controls thereof having been made inoperative, although neither he nor his passenger possessed a pilot certificate valid for the operation involved, and other violations of the Civil Air Regulations.

**ORDER No. 697:** *Delta granted permission to intervene in application of Eastern for amendment to its certificate for route No. 10.*

The Board on October 18 granted Delta Air Corporation permission to intervene in the application of Eastern Air Lines, Inc., for an amendment to its certificate of public convenience and necessity for route No. 10 to include Savannah, Ga., as an intermediate point.

**ORDER No. 698:** *Delta granted permission to intervene in application of Eastern for amendment to its certificate for route No. 6.*

The Board on October 18 granted Delta Air Corporation permission to intervene in the application of Eastern Air Lines, Inc., for an amendment to its certificate of public convenience and necessity for route No. 6 to include Brunswick, Ga., as an intermediate point.

**ORDER No. 699:** *Denied motion of National Airlines to cancel hearing on application of Eastern for amendment to its certificate for route No. 5 until a later date.*

The Board on October 18 denied motion of National Airlines, Inc., to cancel the hearing on the application of Eastern Air Lines, Inc., for an amendment to its certificate of public convenience and necessity for route No. 5 until after the hearing is held on National's application for a certificate of public convenience and necessity between New York, N. Y., and Havana, Cuba.

**ORDER No. 700:** *Granted city of Winston-Salem permission to intervene in application of Eastern for amendment to its certificate covering route No. 5.*

The Board on October 21 granted the petition of the city of Winston-Salem, N. C., for permission to intervene in the application of Eastern Air Lines, Inc., for an amendment to its certificate of public convenience and necessity covering route No. 5.

**ORDER No. 701:** *Approved interlocking relationships of Harold Fabian and Western Air Express, Salt Lake City Union Depot and Railroad Co.*

The Board on October 22 approved interlocking relationships of Harold P. Fabian and Western Air Express Corporation and the Salt Lake City Union Depot and Railroad Co.

**ORDER No. 702:** *Authorized Chicago & Southern temporarily to suspend service to Springfield, Ill.*

The Board on October 24 authorized Chicago & Southern Air Lines, Inc., temporarily to suspend service to Springfield, Ill., for a 60-day period beginning October 24, 1940.

**ORDER No. 703:** *Approved agreement providing for use by T. W. A. of certain services and facilities of American Airlines.*

The Board on October 25 approved an agreement (Contract C. A. B. No. 13) providing for the use by Transcontinental & Western Air, Inc., of certain services and facilities of American Airlines, Inc., at Phoenix, Ariz.

**ORDER No. 704:** *Approved agreement between certain air carriers.*

The Board on October 25 approved an agreement between certain air carriers (Contract C. A. B. No. 105) which is the Articles of Association of the Air Transport Association of America.

**ORDER No. 705:** *Affirmed denial of application of D. W. Alexander for renewal of his commercial pilot certificate.*

The Board on October 25 adopted an order affirming the denial of the application of D. W. Alexander, Washington, D. C., for renewal of his commercial pilot certificate No. 6232. (Opinion and Order—Doc. No. SR-47.)

**ORDER No. 706:** *Authorized Eastern temporarily to suspend service to Spartanburg.*

The Board on October 29 authorized Eastern Air Lines, Inc., temporarily to suspend service to Spartanburg, S. C., for a 60-day period beginning November 1, 1940.

ORDER No. 707: Instituted proceeding for fixing rates of compensation to be paid Pan American for transportation of mail over route between San Francisco and Hong Kong.

The Board on October 29 instituted proceeding for fixing rates of compensation to be paid Pan American Airways Company of Nevada for the transportation of mail over the route between San Francisco and Hong Kong and consolidated it with the pending proceeding for rates of compensation for transportation of mail between San Francisco, Calif., and Auckland, New Zealand.

ORDER No. 708: Student pilot certificate held by Harry Hershey Norman revoked.

The Board on October 18 revoked student pilot certificate No. 85789 held by Harry Hershey Norman, Los Angeles, Calif. for piloting an aircraft acrobatically over a congested area at an altitude of less than 1,000 feet, and other violations of the Civil Air Regulations.

ORDER No. 709: Authorized Penn-Central to serve Hickory, N. C., as an intermediate point on its Route No. 51.

The Board on October 31 issued temporary certificate of convenience and necessity to Penn-Central Airlines Corporation authorizing it to serve Hickory, N. C., as an intermediate point on its Route No. 51 until such time as the Board determines that the airport at Asheville, N. C., is available.

## REGULATIONS

REGULATION No. 121: The Board on October 18 adopted Amendment No. 77 to the C. A. R., making changes in six sections of part 60. The amendment, concerning redesignation of control zones of intersection and certain airway traffic control areas, is as follows:

Effective 12:01 a. m., November 1, 1940, Part 60 of the Civil Air Regulations is amended as follows:

1. By amending section 60.22 to read as follows:

"60.22 Control zones of intersection designation. The radio range station of the Administrator of Civil Aeronautics located at each of the following cities is designated as the center of a control zone of intersection: Albany, N. Y.; Albuquerque, N. Mex.; Amarillo, Tex.; Belgrade, Mont.; Boston, Mass.; Billings, Mont.; Bismarck, N. Dak.; Burlington, Vt.; Charleston, S. C.; Cheyenne, Wyo.; Concord, N. H.; Corpus Christi, Tex.; Daytona Beach, Fla.; Denver, Colo.; El Paso, Tex.; Fargo, N. Dak.; Helena, Mont.; Houston, Tex.; Huron, S. Dak.; Jackson, Miss.; Jacksonville, Fla.; Laramie, Wyo.; Memphis, Tenn.; Miami, Fla.; Millinocket, Maine; Minneapolis, Minn.; Nashville, Tenn.; Mobile, Ala.; New Orleans, La.; Oklahoma City, Okla.; Omaha, Neb.; San Antonio, Tex.; Spokane, Wash.; Tallahassee, Fla.; Tampa, Fla.; Tulsa, Okla.; White Hall, Mont.; Wichita, Kans."

2. By amending section 60.2400 to read as follows:

"60.2400 Green civil airway No. 1 airway traffic control areas (Seattle, Wash., to Boston, Mass.). Those portions of green civil airway No. 1: From Boeing

## SPECIAL NOTICE

### Economic Opinions of the Civil Aeronautics Board Available in Printed Pamphlets—Sold Individually or on Subscription Basis

The CIVIL AERONAUTICS JOURNAL carries in this section an abstract of all rules, regulations, and orders, and a syllabus of all opinions issued by the Civil Aeronautics Board during the half-month ending 2 weeks prior to the date of publication.

All opinions of the Board in economic proceedings now are printed individually and may be obtained on a subscription basis.

Subscriptions for economic opinions will be by volume rather than for specific periods of time. Each volume will comprise approximately 800 pages of printed opinions which ultimately will make up a bound volume of CIVIL AERONAUTICS BOARD REPORTS.

For example, opinions issued subsequent to June 30, 1940 (now being printed) are paginated consecutively from 1 to 800, irrespective of the intervals between publication of individual opinions. The same plates used in printing the "advance sheets" later will be used to print the bound volumes.

The first volume of opinions, comprising all decisions of the independent Civil Aeronautics Authority from the time of its inception to June 30, 1940, when it was transferred to the Department of Commerce, is called CIVIL AERONAUTICS AUTHORITY REPORTS, Volume 1. The next volume, of which currently issued opinions will form a part, will be called CIVIL AERONAUTICS BOARD REPORTS, Volume 2.

CIVIL AERONAUTICS AUTHORITY REPORTS, Volume 1, now is being printed, and notice will be given on this page when it is placed on sale.

The subscription price for each volume of "advance sheets" of economic opinions is \$1. Remittance should be made to the Superintendent of Documents, Government Printing Office, Washington, D. C.

For those who do not wish to subscribe to the complete volumes, the "advance sheets" of economic opinions may be purchased individually. As each opinion becomes available in printed form, the title of the case, docket number, order number, date, and price will be listed in the Official Actions section of the JOURNAL. All orders must be sent to the Superintendent of Documents.

Opinions in cases of suspension, revocation, or denial of airman certificates are available in mimeograph form only. Verbatim copies of these may be obtained by addressing a request to the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C.

Field, Seattle, Wash., to a line extended at right angles across such airway through a point on the center line thereof 25 miles northeast of the Ellensburg, Wash., radio range station; from a line extended at right angles across such airway through a point on the center line thereof 25 miles southeast of the La Crosse, Wis., radio range station to the intersection of the center line of the on-course signal of the east leg of the Detroit, Mich. (Wayne County Airport), radio range and the United States-Canadian Border; from the intersection of the center line of the on-course signal of the west leg of the Buffalo, N. Y., radio range and the United States-Canadian Border, to a line extended at right angles across such airway through a point on the center line thereof 25 miles east of the Syracuse, N. Y., radio range station."

3. By amending section 60.2410 to read as follows:

"60.2410 Amber civil airway No. 1 airway traffic control areas (San Diego, Calif., to the United States-Canadian Border). All of amber civil airway No. 1."

4. By amending section 60.24200 to read as follows:

"60.24200 Red civil airway No. 1 airway traffic control areas (Portland, Oreg., to Salt Lake City, Utah). All of red civil airway No. 1."

5. By amending section 60.24300 to read as follows:

"60.24300 Blue civil airway No. 1 airway traffic control areas (Pendleton, Oreg., to Spokane, Wash.). From the Pendleton, Oreg., radio range station to a line extended at right angles across such airway through a point on the center line thereof 25 miles northeast of the Pendleton, Oreg., radio range station."

6. By amending section 60.24311 to read as follows:

"60.24311 Blue civil airway No. 12 airway traffic control areas (Northdallas, Wash., to Ellensburg, Wash.). All of blue civil airway No. 12."

REGULATION No. 123: The Board on October 25 adopted Amendment No. 79<sup>1</sup> of the C. A. R. The amendment makes additions to four sections of Part 40 of the C. A. R., requiring a means to stop engine rotation in flight. The amendment in full follows:

Effective November 1, 1940, Part 40 of the Civil Air Regulations, as amended, is amended as follows:

(a) By adding to section 40.232 a new subsection as follows:

"40.2320 Engine Rotation. On and after July 1, 1941, applicant shall show that any aircraft to be used in air transportation which have engines with maximum power ratings of 480 horsepower or more are so equipped that engine rotation may be promptly stopped during flight; and, on and after July 1, 1942, the same showing shall be made with respect to all other aircraft to be used in air transportation."

(b) By adding to sections 40.233, 40.250, and 40.332 the same new subsection except that such subsection shall be numbered either 40.2330, 40.2500, or 40.3320, as the case may be.

<sup>1</sup> This supersedes Amendment No. 78 of the C. A. R., Regulation serial No. 122, which covered the same points as Amendment No. 79, but was not given public distribution.

# Status of Parts of Civil Air Regulations and Amendments

[As of November 1, 1940]

Because of limitations on the number of copies of the Parts of the Civil Air Regulations which may be printed for free distribution, certain Parts have been placed on sale so that they may be made available to persons not affected by the C. A. R. and who, therefore, are not eligible for free copies under the policy followed by the Civil Aeronautics Administration. As other Parts are issued, they also will be placed on sale.

Those available for purchase now are as follows: Part 01. Aircraft Registration and Airworthiness Certificates; Part 02. Type and Production Certificates; Part 20. Pilot Certificates; Part 24. Mechanic Certificates; Part 27.

Aircraft Dispatcher Certificates; Part 51. Ground Instructor Rating; Part 52. Repair Station Rating; and Part 53. Mechanic School Rating. They may be obtained by addressing the Superintendent of Documents, Government Printing Office, Washington, D. C. The price for each Part is listed. Remittance must accompany order.

Persons who are affected by the Civil Air Regulations, including those preparing for examination for certificates, may obtain the Parts required from the Publication and Statistics Division, Civil Aeronautics Administration, Washington, D. C., without charge. Not more than 1 copy may be furnished to individ-

uals and not more than 10 to aviation organizations or agencies. ONLY THE PARTS ACTUALLY NEEDED SHOULD BE REQUESTED.

For example, pilots are governed in general by parts 01, 20, and 60; aircraft mechanics by parts 01, 04, 15, 18, 24, and section 60.32; and aircraft engine mechanics by parts 01, 04, 13, 14, 18, and 24.

Amendments to the C. A. R. also may be obtained from the Publications and Statistics Division without charge, except in the case where an amendment replaces or is the same as a Part of the C. A. R. These will be placed on sale by the Superintendent of Documents.

Part No.	Title	Effective date	Remarks	Amendments in effect to date
<b>AIRCRAFT</b>				
00.	CANCELLED.....		Now incorporated in Part 01.....	
01.	AIRCRAFT REGISTRATION AND AIRWORTHINESS CERTIFICATES.....	July 15, 1940	In stock; on sale at G. P. O. 5 cents.....	68, 75.
02.	TYPE AND PRODUCTION CERTIFICATES.....	do.....	do.....	75.
03.	CANCELLED.....		Now incorporated in Part 01.....	
04.	AIRPLANE AIRWORTHINESS <sup>1</sup> .....	May 31, 1938	In stock; order from C. A. A. only.....	601-A-1, 4, 5, 14, 26, 28, 48, 56, 69, 75
13.	AIRCRAFT ENGINE AIRWORTHINESS.....	do.....	Reprint, including amendments, to be available soon from C. A. A.....	
14.	AIRCRAFT PROPELLER AIRWORTHINESS <sup>1</sup> .....	do.....	do.....	
15.	AIRCRAFT EQUIPMENT AIRWORTHINESS <sup>1</sup> .....	do.....	do.....	
18.	REPAIR AND ALTERATION OF AIRCRAFT.....	do.....	do.....	
<b>AIRMEN</b>				
20.	PILOT CERTIFICATES.....	May 1, 1940	In stock; on sale at G. P. O. 5 cents.....	54, 63, 65, 67, 75.
21.	AIRLINE PILOT RATING.....	do.....	Revision in preparation: to be available soon and will be on sale at G. P. O.....	
23.	CANCELLED.....		Now incorporated in Part 51.....	
24.	MECHANIC CERTIFICATES.....	May 1, 1940	In stock; on sale at G. P. O. 5 cents.....	44, 61, 73, 75.
25.	CANCELLED.....		Now incorporated in Part 24.....	
26.	AIR-TRAFFIC CONTROL-TOWER OPERATOR CERTIFICATES.....	Aug. 15, 1940	Now being printed. Will be available shortly and will be on sale at G. P. O.....	
27.	AIRCRAFT DISPATCHER CERTIFICATES.....	July 15, 1940	In stock; on sale at G. P. O. 5 cents.....	74, 75.
<b>AIR CARRIERS</b>				
40.	AIR CARRIER OPERATING CERTIFICATION (INTERSTATE).....	May 31, 1938	In stock; order from C. A. A. only.....	601-A-1, 3, 6, 12, 29, 51, 56, 75, 79.
<b>AIR AGENCIES</b>				
50.	FLYING SCHOOL RATING <sup>1</sup> .....	Aug. 1, 1940	Now being printed. Will be available shortly and will be on sale at G. P. O. 5 cents.....	
51.	GROUND INSTRUCTOR RATING.....	May 1, 1940	In stock; on sale at G. P. O. 5 cents.....	75.
52.	REPAIR STATION RATING.....	do.....	do.....	75.
53.	MECHANIC SCHOOL RATING <sup>1</sup> .....	do.....	do.....	75.
<b>AIR NAVIGATION</b>				
60.	AIR TRAFFIC RULES <sup>2</sup> .....	May 31, 1938	Revision with minor changes, including amendments to Oct. 4, to be available shortly and will be on sale at G. P. O.....	76.
61.	SCHEDULED AIR CARRIER RULES (INTERSTATE).....	do.....	In stock; order from C. A. A. only.....	601-A-1, 51, 52, 62, 75.
<b>MISCELLANEOUS<sup>2</sup></b>				
98.	DEFINITIONS.....	May 31, 1938	Reprint, including amendments, to be available soon from C. A. A.....	
99.	MODE OF CITATION OF REGULATIONS.....	do.....	do.....	

<sup>1</sup> Supplementary Manual for this part available; order from C. A. A. only.  
<sup>2</sup> Parts 90.-96., inclusive, have been cancelled.

NOVEMBER 1, 1940