What's New in World of Air Transportation

Analyzer Provides Lasting Record of Flight

By WAYNE THOMIS

TODAY more than ever before the commercial airlines of the country are demanding carefully controled precision flying from their pilots. Chiefs of operations for all the lines are insisting upon rigid adherence to carefully thought-out flight procedures.

Efforts to increase the safety of operations, economy of flying and maintenance, uniformity of flying by all pilots, and regularity of schedules all are influencing the airline operators in this direction.

Several of the largest airlines learned to their sorrow and financial loss last winter that some of their airmen have made a practice at times of disregarding instructions and flight regulations. Some of these pilots were at the controls of airplanes which crashed carrying passengers.

While such careless and thoughtless flying is definitly not the rule, and while the operators hesitated to take any step which even, by implication, would indicate that they considered their pilots allowed themselves such liberties, it recently was decided by all the large operators and the air commerce bureau that any further supervision which could be extended to the men who are doing the flying would be welcome.

This was, in fact, advocated by the airline pilots themselves, for several reasons. First of all the pilots, as a group, are strongly opposed to reckless flying of any sort. They believe that individuals who show symptoms of such practices should be severely disciplined.

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Second, the airmen pointed out that considerable knowledge of equipment, of the value of certain instruments, could be gained by a closer watch upon daily flying. The flight procedures as now established, they said, can be tested only by the most accurate checks, and supervision of every flight will, in addition to other benefits, enable the engineers to determine whether these procedures are correct as they stand.

It was with these thoughts in mind that United Air Lines several months ago put R. D. Kelly, formerly chief instrument engineer for the company and now in charge of the research division, to the job of creating some gadget which would enable dispatchers, chief pilots, and other operations officials to analyze every flight after it has been made.

Kelly was told to find some device which would be self-recording and entirely independent of the pilot in any ship where it might be installed. It must, Kelly was informed, make a precisely accurate report upon what was done with the airplane, the altitudes at which flights were completed, and provide other related information.

In conjunction with experts from the Julien P. Friez company of Baltimore, makers of barographic and similar delicate recording equipment, Kelly devised what United's operations authorities call a "flight analyzer." So completely does the device fill the bill that sixty have been purchased and by the time this is read they will be installed in every one of United's Boeing and Douglas airplanes.

The instrument itself consists of a barograph, a clock, and three recording arms. One of these is actuated by the barograph. Another, through electric impulses, records the amount of time on every flight that the automatic giro pilot is in control of the airplane. The third registers the number of times on each trip that the radio transmitter on the airplane is operated.

Although this sounds as if it might need a fairly complicated mechanism, the analyzer actually is housed in a duralumin case five and a half inches wide by eight and a quarter inches long and four inches thick. The device weighs only three pounds.

Its record is kept on a chart three inches by five inches in size. The card is moved by the clock mechanism and the barograph so that the ink trails left by pens on the recording arms are accurate to the second. Movement of the card also allows the barograph arm to show upon the printed scale the rate of climb after take-off, the cruising altitude and any changes of altitude in flight, the rate of descent, the total time for the trip, the comparative smoothness of the flight, as well as the other information already indicated.

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The card reveals even more to one trained to read it than would appear upon first glance. Equipped with a scale, a chief pilot or dispatcher can calculate the following items from study of the card:

1. Rate of climb.
2. Amount of power utilized for climb.
3. Accuracy with which the pilot determined his cruising speed. In other words, one can determine whether a number of different throttle settings were used or whether the engines were operated at one power throughout.
4. Rate of descent.
5. Air speed of the ship on the trip (with the help of meteorological data).
6. Ground speed of the ship on the trip.

One of the important functions of the card is to check the efficient use of the automatic giro pilots in all the company's Douglas planes. A compilation of records since these machines came into service indicates that the giro pilots do from 85 to 90 per cent of all the flying. The analyzer shows exactly how long on each trip the giro was in operation and indicates whether or not the adjustment of the giro was correctly made.

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Most of all, however, the presence of the analyzer in any ship makes a pilot regulation conscious. With this device in action no pilot will fly at altitudes lower than the minimums prescribed for the various routes by the company.

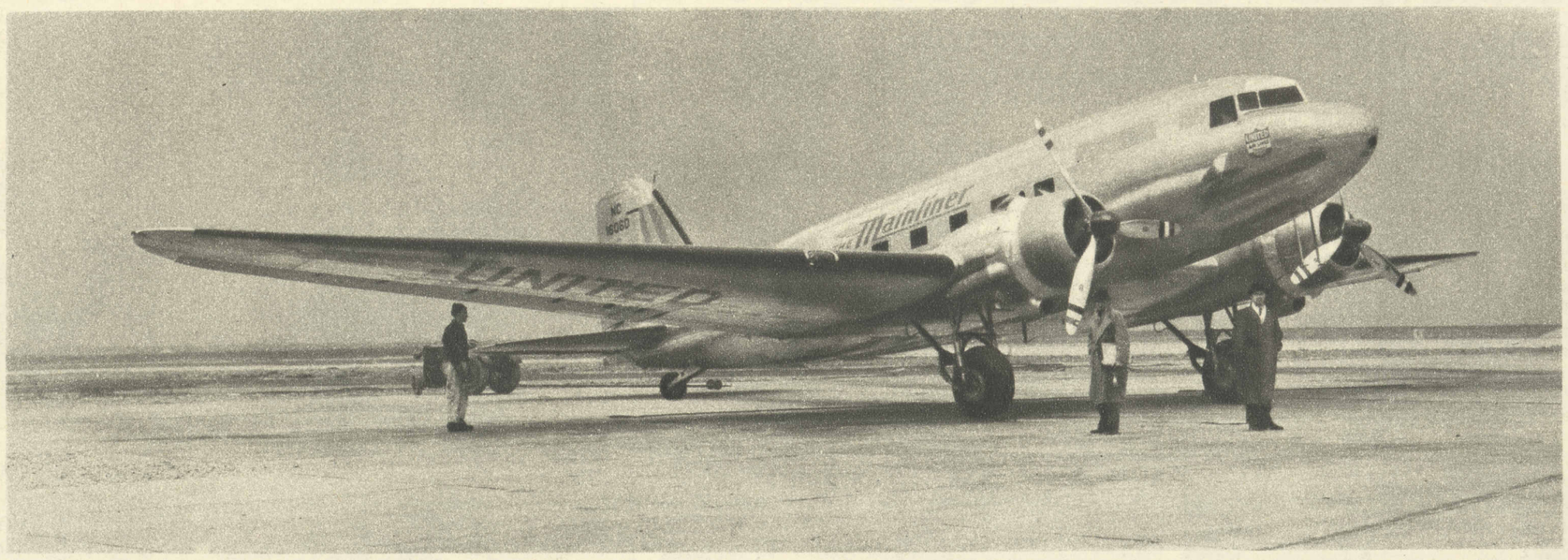
Nor will the most reckless airman disregard airways trafic control regulations with the analyzer providing a positive record of his violation.

The flight analyzer card and clock have "cruising" ranges of eight hours. This is substantially longer than the longest nonstop run on any United Air Lines trip, so that one card will provide the complete record of even the longest nonstop flight.

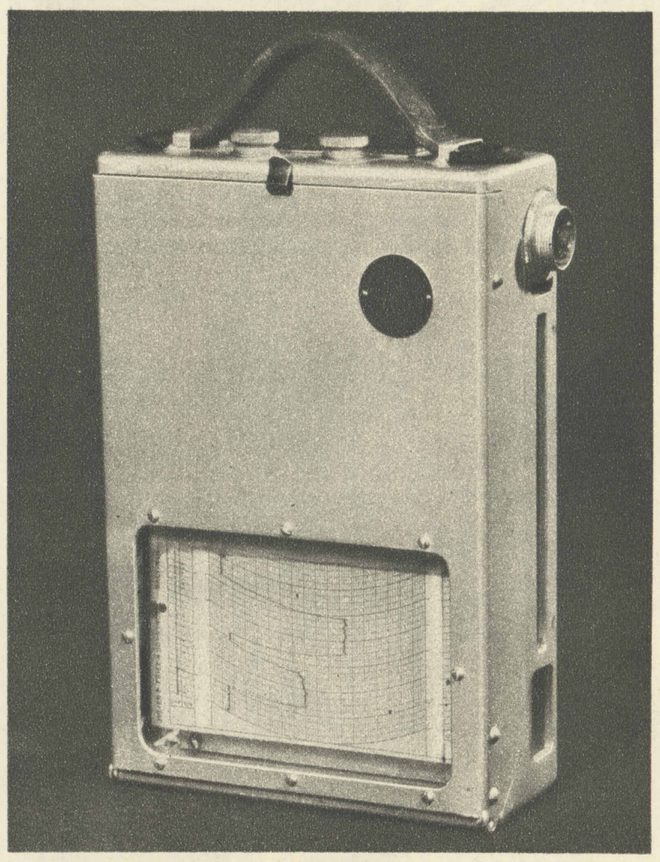
The analyzer is placed in the baggage compartment in the tail of the ship, a compartment which it is impossible for any member of the crew to reach in flight.

At each stop on any given trip the dispatcher, or any other qualified official, can examine the flight record by opening the baggage hatch. The instrument need not be disconnected or opened, a window being provided through which the record on the card can be seen.

United is the first transport line to install these devices, but they already have been found so successful that undoubtedly the other operators will follow the lead.



One of the Douglas DC-3 mainliners in which the new flight analyzers have been installed. Every change of altitude, every bump in rough air, the rate of climb and of descent, and even the power taken from the engines can be determined from the anaylsis card. (United Air Lines photos.)



This is the flight analyzer closed and ready for operation with the flight card inserted. The electric plug at the upper corner of the box is used to complete the connection with the giro pilot and the radio transmitter.

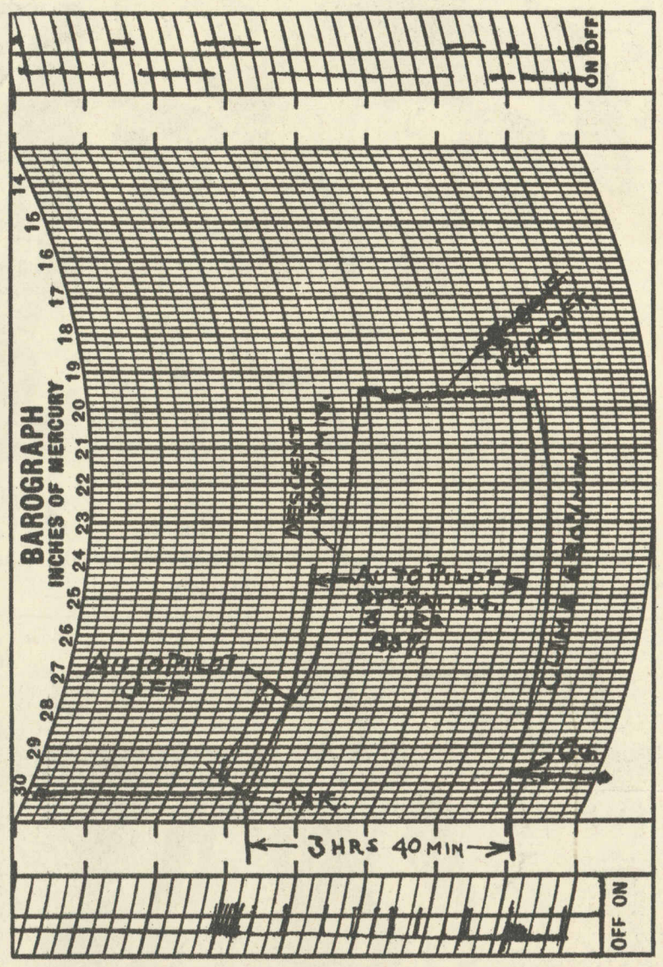
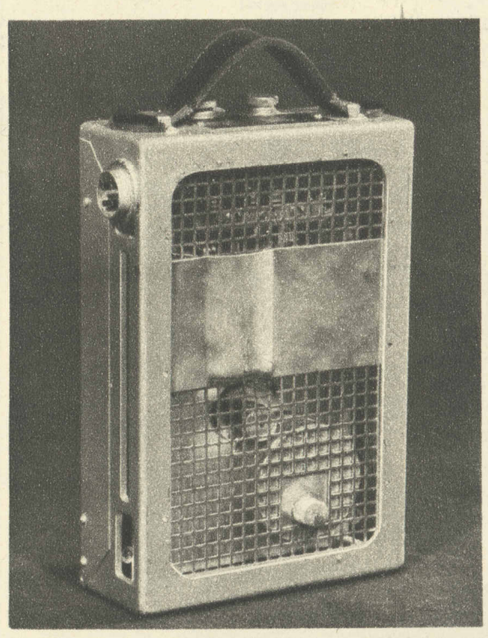
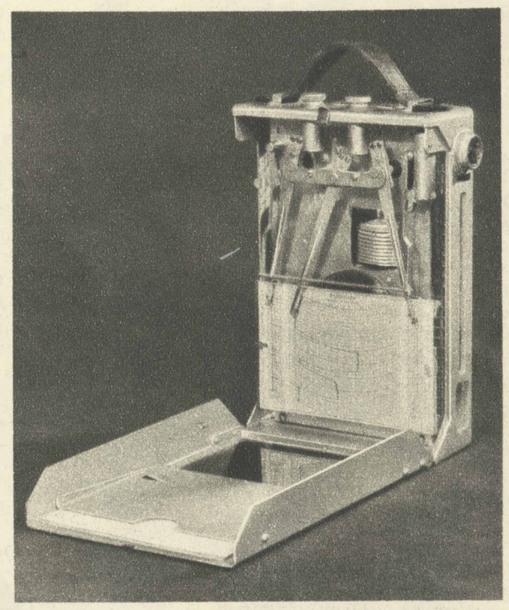


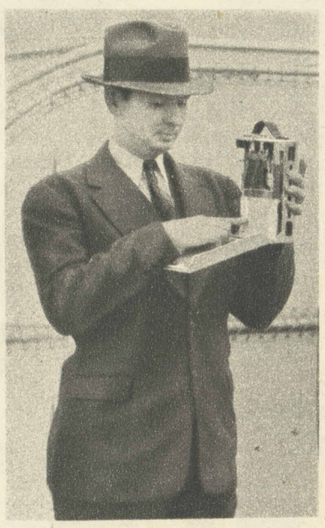
Chart showing record of a non-stop flight from Chicago to New York. The trip required 3 hours 40 minutes. After take-off the ship climbed at the rate of 630 feet per minute to an altitude of 12,000 feet, which was maintained for two hours 15 minutes. Descent to Newark airport was made at the rate of 300 feet per minute.



Back of the flight analyzer case.



With the case open, the simplicity and delicacy of the internal workings of the instrument become evident.



R. D. Kelly, United Air Lines research engineer, holding an analyzer.

U. S. Millions Flow Into England via Altar

(Continued from page three)

who was a baroness in her own right.

Sometimes when money does not marry actually a title, it seems to help in acquiring one. When Mary Ethel Burns of New York, daughter of William H. Burns and niece of John Pierpont Morgan Sr., was married to William Edward Harcourt, he was just plain "mister." His ability and his diligence as member of parliament and colonial secretary might have been unrewarded but it was not. In 1917 he was created Viscount Harcourt and his wife, Viscountess Harcourt, is a justice of the peace, which is a singularly honorable title not generally accorded to Americans. She is a personal friend of Queen Mary's, and King Edward VII. was godfather to her son.

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Viscountess Harcourt's son, the present viscount, inherited the title from his father when he was 14 years old, and when he came of age, financial interests in the firm of Morgan Grenfell & Co. entitled him to an office in the London firm. In 1930, at the age of 22, he married Lady Elizabeth Grosvenor, the only daughter of Baron Ebury. There are three Harcourt sisters sharing the Burns-Morgan millions — the Hon. Mrs. James Baird, the Hon. Mrs. John Mulholland, married to the brother of the present Baron Dunleath, and the Hon. Mrs. Alexander Baring, married to son and heir of the fifth Baron Ashburton.

This Baron Ashburton himself sought an American wife for his second marriage—Frances, the daughter of J. C. Donnelly of New York.

(Associated Press photo.)
Maj. E. D. Metcalfe and his wife, Lady Alexandra, a granddaughter of Levi Z. Leiter of Chicago.

In the Scottish scene we have the same infiltration of American money through marriage. It is amusing to note that the heads of two of the hereditarily hostile clans have chosen American wives. The head of the Stuarts, the earl of Moray, married in 1924 Barbara, the daughter of J. Archibald Murray of New York. Her husband is the 17th in lineal descent from Regent Moray, the father-in-law of the "Bonnie Earl" commemorated in song. He was murdered by the followers of the then earl of Huntley, the chief of the Gordons, and ever since the Stuarts and the Gordons have been enemies. But the one thing they have in common is a preference for American wives. The marchioness of Huntley was Mrs. James MacDonald of Cincinnati, daughter of James H. Fallon. Before he died earlier this year the marquess of Huntley had been a marquess for 73 years, having succeeded to the title when he was 16 years old. The widow, marchioness of Huntley, lives at Aboyne castle, Aberdeenshire, where many years ago her husband instituted the Aboyne Highland gathering.

The earl and countess of Moray have four family seats —Castle Stuart in Inverness, Darnaway castle in Morayshire, Donibristle park in Fife, and Doune Lodge in Perthshire. They sold Kinfauns castle last year in order to pay the death duties on the other four. The king and queen, as duke and duchess of York, were frequently their guests during the Scottish season.

Baroness Ravensdale, sister of Lady Alexandra Metcalfe and the late Lady Cynthia Mosley.

In addition to the Englishmen who have chosen to marry wealthy American girls there are many who have found in them a colorful, robust vitality combined with an assurance and *savoir faire* that cannot be equaled in Europe. They have courted them irrespective of bank accounts.

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In English society today we have Lady Dennistoun Burney, formerly Miss Gladys High of Chicago, married to England's ace dirigible designer; Mrs. Trevor Stamp, formerly Miss Frances Bosworth of Chicago, now married to the son of Sir Josiah Stamp and an authority on tropical diseases; Mrs. Gordon Padley, her sister; Mrs. Claude Leigh, one of Mayfair's most successful hostesses and formerly Miss Myrtle Johnson of Chicago; Mrs. William de Burgh Whyte, formerly Miss Vaux, daughter of the late Mr. and Mrs. Frederick Vaux of Chicago; Mrs. Gerard Leigh, formerly Miss Helen Goudy of Chicago, whose house in Mayfair was one of the most beautiful for entertaining.

In the literary world there is Miss Mary Borden, now wife of Brigadier General E. L. Spears, a member of parliament. Miss Maysie Gasgue, a participant in the Woolworth millions, and who undoubtedly brought some of it to her marriage, is the wife of Roland Robinson, a young Conservative member of parliament.