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ABSTRACTS FROM THE SCIENTIFIC AND TECHNICAL PRESS.

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The Fundamentals of Photoelastic Stress Analysis Applied to Dynamic Problems. (W. N. Findley, Eastern Photoelasticity Conference, Cornell University, 1939, pp. 1-11.) (116/1 U.S.A.)

Photoelastic stress analysis depends on the fact that for most transparent isotropic solids the velocity of propagation of polarised light will depend on whether the beam is polarised along or perpendicular to the direction of stress. Moreover, this velocity depends on the state of stress.

If a beam is subjected to pure bending, only longitudinal stresses are set up which vary directly as the distance from the neutral plane. The state of stress is thus constant in a series of planes parallel to the neutral plane, reaching its maximum values (compression or tension) on the outer surface of the beam. If such a transparent beam is illuminated laterally by polarised monochromatic light, the plane of polarisation being inclined at 45° to the axis of the beam, the component in the plane of stress will travel at a different speed to the component perpendicular to the stress and on examining the transmitted light through an analyser, interference fringes parallel to the neutral plan of the beam will be seen.

In the neutral plane itself, since there is no stress, the vertical and horizontal components of the polarised light remain in step and will both be extinguished by the analyser, resulting in a dark fringe. The next dark fringe will appear when the retardation due to the state of stress of the material is equivalent to a path difference of one wavelength between the two polarised components of the light.

In general we thus have

$$n\lambda = c\sigma t \qquad (1)$$

where n = fringe order.
σ = state of stress.
c = photoelastic constant of material.
t = width of beam (path length).

Fringe order zero ($\sigma = 0$, $n = 0$) thus corresponds to the neutral plane.
If λ is measured in A units

σ 16 psi
t inches
c Brewster
$n\lambda = 1.75\ ct$

The following values of c are of interest:—

	c
Optical glass ...	1 – 10
Celluloid ...	20
Bakelite ...	60
Gelatine ...	α 10,000

The higher c, the smaller the stress increment between successive fringes. Thus with $\lambda = 4{,}400$ and thickness of beam = 1 in., the stress increment
= .25 psi for gelatine
= .40 psi for bakelite.

Since in pure bending,

$$\sigma = (M/I)\,y$$
$$= (E/\rho)\,y$$

where y = distance from neutral plane.
ρ = radius of curvature.
M = bending moment.
I = moment of inertia of section,

we have

$$n\lambda = c\,(M/I)\,y\,.\,t \qquad (2)$$

where y = distance of fringe of order n from neutral axis.

For a given beam and bending moment, y/n is therefore constant, *i.e.*, the fringes are equally spaced. Also the fringes order n corresponding to a given distance y varies directly as the bending moment, *i.e.*, the fringes are the closer together, the higher the bending moment. Static tests have confirmed these conclusions in the case of bakelite and celluloid under pure bending.

From equation (2) we obtain

$$\lambda/c = \text{fringe value}$$
$$= (y/n) \times (t) \times (E/\rho) \qquad (3)$$
$$= \text{constant for a given material.}$$

$$\text{Also } \frac{\text{fringe value} \times \text{order number}}{\text{width of beam}} = \text{longitudinal stress.}$$

For bakelite $\lambda/c = 71.1$
For celluloid $\lambda/c = 211$ } static conditions, $\lambda = 4{,}481\ A$.

For the same size beam and bending moment, therefore

$$\overline{y/n}\Big|_{\text{bakelite}} = (1/3)\ \overline{y/n}\Big|_{\text{celluloid}}$$

i.e., the fringes are much more closely packed in the former material.

The object of the author's experiments was to determine whether λ/c depends markedly on the rate of loading. Now it is known that the fringe value of both bakelite and celluloid depends on the previous stress history and the static values quoted above only apply to the first loading of freshly prepared (annealed) material.

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The effect of rate of loading can therefore only be investigated for a single application of the load. For this purpose the author devised a loading machine consisting of a rotating flywheel fitted with a cam, the bending moment on the specimen being produced by a roller actuating a yoke contacting the ends of the beam. A special electric relay enables the roller to be displaced so as to miss the cam, this enabling the flywheel to be run up to speed. At the required instant, the roller is allowed to contact the flat portion of the cam and withdrawn again after maximum deflection.

The fringe pattern during the bending process is photographed on a rotating film, the light source being a high frequency spark of short duration. The central deflection of the beam corresponding to each pattern can also be measured from the photographs and thus the radius of curvature of the beam estimated. Assuming that E maintains its static value, the fringe value can therefore be calculated from equation (3), the factor (y/n) being determined by the fringe spacing on the particular photograph. By repeating the experiment at different flywheel speeds, any effect of rate of loading on fringe value is rendered obvious.

The results show that in case of bakelite λ/c is not affected by rate of loading, the average fringe value under dynamic conditions being certainly within 1 per cent. of the static value (71.1). In the case of celluloid however, the dynamic fringe value is about 16 per cent. less than the static value, this drop being already indicated at the lowest experimental speed. Subsequent increase in speed of loading apparently produces no further effect.

The above conclusions depend on the fact that the test was carried out under pure bending and that E is not affected by speed of loading.

Further experiments are in hand to verify the constancy of C and E under more general conditions.

Gelatine Models. (T. R. Cuykendell, Eastern Photoelasticity Conference, Cornell University, 1939, pp. 13-17.) (116/2 U.S.A.)

Gelatine models have been successfully employed for the study of foundation stresses in gravity earth dams, the main interest being the effect of slope of the dam on the toe stresses. Details of making the model are given. The main difficulty is to free the gelatine from the glass surfaces of the mould after casting and the subsequent replacement of the model.

It was found that a preliminary lining of the glass mould with cellophane .001 in. thick facilitated removal from the mould whilst subsequent freedom of the model under the action of gravity was ensured by a thin film of lubricating oil on the cover glasses.

The calibration of the material was effected by cutting a suitable prism from the body of the model and loading it with mercury. Straight line calibrations are obtained, the fringe value of the material being of the order of .23 psi (c=10,000 Brewsters, see Abstract 116/1).

Gelatine, although attractive in many respects on account of its cheapness and the relative ease with which large models can be prepared, suffers from the drawback that the fringe value alters with time (about 10 per cent. in 15 hours) and that successive melts and casts of the same concentration may differ by as much as 15 per cent., depending on the treatment of the material. A detailed study of the elastic-optical properties of the gelatine is therefore of limited value for general use, since the physical properties depend so much on manipulation, remelt, pH value, shrinkage or swelling at the surfaces.

It appears, however, that satisfactory models can be made, provided precautions are taken during manufacture (*e.g.*, the gelatine should be in the liquid form for as short a time as possible) and that the model is frequently tested for permanent relative retardation, non-linearity of stress optical coefficients, swelling, etc.

Three Dimensional Photoelastic Analysis by Scattered Light. (R. Weller, Eastern Photoelastic Conference, Cornell University, 1939, pp. 19-21.) (116/3 U.S.A.)

The difficulty of three dimensional photoelastic stress analysis is due to the fact that the phase difference of the emerging beam represents the integrated effect of the whole path and thus gives no information of the distribution of stress. If, however, a source of polarised light could be obtained inside the model, the motion of this source along a given path away from the observer would enable us to judge the state of stress along this path, since a uniform stress would require dN/dS=constant where N=number of fringes corresponding to a displacement S of the source.

Such a source of polarised light within a model may be produced by scattering. Consider, for example, a horizontal tension member made of transparent plastic and illuminated from below through a slit placed parallel to the stress axis. A thin longitudinal section is thus illuminated. The light is polarised at 45° to the slit length and on entering the model will be split into two equal components, respectively, along the perpendicular to the beam. As the beam of light penetrates the model, the relative phase of the two components will differ and at certain points will amount to multiple of one wavelength. All such points, when viewed at right angles to the original plane of polarisation will appear as bright bands due to scattered light whilst those with a phase difference corresponding to a multiple of half wave lengths will appear black under similar conditions. If the fringe value of the material of the model is known, the stress will follow directly by dividing this constant by the fringe spacing. The closer the spacing, the higher the stress.

Refraction at the boundaries of the model is eliminated by immersing the latter in a liquid of the same refractive index as that of the transparent solid. (In the case of bakelite, a mixture of Halowax oil and mineral oil.)

It should be pointed out that the stress distribution obtained in this manner corresponds to that existing in the thin internal section illuminated by the beam of light and is not affected by the outside material of the model.

Fixing our attention on some particular point inside the model, it is now possible to orientate the model so that the fringes are most closely packed. The light direction is now normal to the plane containing the largest and smallest principal stress. The model is next rotated through 90° about a line in this plane and then turned in a plane normal to the light beam and the positions of closest and widest spacings of the fringes noted. Both the maximum shear and the three principal stress directions are thus known exactly as in conventional two dimensional photoelastic analysis. Since at the free boundary one of the principal stresses is zero, the other two may be evaluated by observing consecutively the fringe spacing in a plane containing the zero stress and one of the other stresses.

The values at the interior of the model may then be estimated by the network method. The main disadvantage of the scattered light method of photoelasticity is the relatively long exposure time required for complicated stress patterns. In this case the width of the slot must necessarily be small. Using $\frac{1}{8}$ in. width, an 85 watt mercury arc, exposure varying from 30 minutes to six hours were required by the author.

Two examples of scatter fringes obtained respectively with a circular and square shaft under torsion are given.

The Preparation of Photoelastic Models. (M. L. Price, Eastern Photoelastic Conference, Cornell University, 1939, pp. 23-26.) (116/4 U.S.A.)

Photoelastic investigations were originally carried out on glass models, but difficulties of manufacture of the models and application of the load severely restricted practical applications.

Useful progress was only made with the advent of optically sensitive plastics which can be easily cut to shape and produce a closer fringe spacing. At the moment, the most generally employed material is water-white bakelite, BT 61-893. Only in special cases, especially for large models, alternative materials such as celluloid and gelatine are employed.

The bakelite is available in standard plates $6 \times 12 \times \frac{1}{4}$ inch (rough sawn) with the surfaces either polished or unpolished. On account of the great saving in cost, the author recommends carrying out the polishing in the laboratory. It appears that satisfactory results can be obtained by rubbing the specimen over with various grades of emery paper supported on a smooth surface such as glass.

For the actual manufacture of the model, the author recommends selecting areas of the plate which preliminary examination has shown to be reasonably free from stress. The profile of the model is then laid on the polished surface and the part cut out by a machine powered jig saw operating at about 500 strokes per minute, $\frac{1}{16}$ to $\frac{1}{8}$ in. excess stock being left for finishing. This is carried out with a rotary file.

Simple shapes can also be produced on a milling or shaping machine, provided very sharp tools ground to give ample relief and produce a shearing cut are employed. Light cuts and low cutting speeds must be employed, with a light mineral oil or soda water as coolant.

If great care is taken, the residual stress effect is small and the model can be immediately used, before drying out of the edges introduces optical effects. If necessary, small inherent stresses can be allowed for by taking a preliminary fringe pattern at about 10 per cent. full load and working by difference.

In case of larger inherent stresses, however, and in all cases where the model is intended for instructional purposes necessitating long periods of utilisation, some form of annealing is required. For this purpose immersion in an oil bath at 230°F. for 2-3 hours is recommended. The subsequent cooling must be very slow, the maximum rate being 3-6°F. per hour. The author points out that annealing sometimes introduces more serious effects than the faults it is supposed to remedy. For this reason every effort should be made both in the selection of the material and subsequent machining of the model to prevent accumulation of stresses and make direct observation possible.

Stress Peaks in Cold Worked Riveted Plates. (M. Koenig, Schweizer Archiv., Vol. 3, No. 2, Feb., 1937, pp. 41-46.) (116/5 Switzerland.)

The cold working of rivets introduces additional radial and tangential stresses in the plate hole due to the expansion of the rivet shaft. These stresses are similar to those arising when a rivet of larger diameter is inserted in a hole previously expanded by heating the plate and then allowing the plate to cool. (Theory of shrinkage.)

If r = initial diameter of rivet hole (cm.).
E = modulus of plate kg./cm.^{2}.
Δ = expansion of hole (cm.).
x = distance from centre of hole.

The radial and tengential stresses are given by

$$\left.\begin{aligned} \sigma_r &= -p_A\left(\frac{r^2}{x^2}\right) \\ \sigma_t &= +p_A\left(\frac{r^2}{x^2}\right) \end{aligned}\right\} \qquad (1)$$

where $p_A = E\Delta/2r$ = specific shrinkage pressure.

On the assumption of an elastic deformation of .15 per cent. over and above the permanent set, we have $\Delta/2r = .15/100$

$$p_A = E\ (\Delta/2r) = 1050 \text{ kg./cm.}^2\ (E = 7{,}000{,}000 \text{ for Al.}).$$

This is the radial or tangential stress at the hole since $r/x=1$, and is constant round the periphery. If several holes are present, the stress pattern will superpose, leading to slightly higher edge stresses at certain points of the intermediate holes.

If now the riveted joint is subjected to tension, two further sets of stress fields are introduced.

(1) The rivet, acting as a pin, will subject one side of the hole to a mean bearing pressure p_L given by

$$p_L=\frac{P_r}{ds}$$

where P_r = load on rivet.
d = diameter of hole.
s = thickness of plate.

In the case of single row rivets, $P_r=P_T/n$,

where P_T = total tensile load on plate.
n = number of rivets.

P_T is fixed by the fact that the plate stress in the metal between the holes must not exceed a certain limiting value, on the assumption that this stress distribution is uniform and not affected by the presence of the hole. This will be considered in section (2) below.

Experiment has shown that the actual stress at the edge of the hole in the direction of pull may attain $2.5\ p_L$.

With increasing distance from the edge of the hole (in direction of pull)

$$\sigma=\pm p_L\left(\frac{r^2}{x^2}\right) \quad (2)$$

(2) The effect of the hole on the stress distribution is expressed by the author as follows:—

$$\left.\begin{aligned}\sigma_t&=\frac{1}{2}p\left(1+\frac{r^2}{x^2}\right)-\frac{1}{2}p\left(1+\frac{3r^4}{x^4}\right)\cos 2\phi\\ \sigma_r&=\frac{1}{2}p\left(1-\frac{r^2}{x^2}\right)+\frac{1}{2}p\left(1-\frac{3r^2}{x^2}\right)\cos 2\phi\end{aligned}\right\} \quad (3)$$

where p = basic load on plate (kg./cm.²).
ϕ = angle between direction of external load and point under consideration, as viewed from centre of hole.

The actual stress distribution of the riveted plate under tensile load is then given by the superposition of the three tensile fields considered above, *i.e.*:—

(1) Elastic deformation of edge due to expanding rivet shaft.
(2) Bearing pressure.
(3) Hole effect.

Of these (1) is independent of the external load applied.

The author has carried out this summation for a simple riveted joint of the following dimensions:—

Diameter of rivet ...	1.3 cm.
Rivet spacing	3.25 cm.
Number of rivets... ...	2
Edge spacing	2.6 cm. (symmetrical)
Plate thickness	.5 cm.
Basic load on plate ...	500 kg./cm.²

Four quadrant positions at the circumference of the hole are considered, labelled respectively 1, 2, 3 and 4 in a clockwise direction.

The external load is applied in the direction 1-3, maximum bearing pressure being exerted at 1.

The following table gives the stresses at the individual positions due to the various component loads as well as their summation for a single hole. The number in brackets gives the corresponding stress equation. These stresses will vary with distance from the edge in accordance with the equations given above and the stress pattern due to a number of holes in the resultant of the individual patterns.

In the example considered by the author, this will lead to a small increase of stress in the region between the holes.

	Position Number.							
	1		3		2		4	
Type of Stress.	σ_t	σ_r	σ_t	σ_r	σ_t	σ_r	σ_t	σ_r
Elastic Deformation (1)	1050	−1050	1050	−1050	1050	−1050	1050	−1050
Bearing Load (2)	2250	−2250	0	0	0	0	0	0
Hob Effect (3)	− 500	0	− 500	0	1500	0	1500	0
Total (Kg./cm.²)	2800	3300	550	−1050	2550	−1050	2550	−1050

It will be noted that even without any external load, the edge stress due to elastic deformation is considerable. If the joint is subjected to a relatively small load corresponding to 500 kg./cm.², the edge stresses reach a peak value of 3,300 kg./cm.² at position 1.

Now we know from the practical behaviour of such riveted joints that their fatigue strength is superior to that of a welded joint.

It is then clear that the theoretical peak stresses calculated above must equalise themselves largely by plastic flow and permanent stretch.

The above investigation nevertheless emphasises the need of certain precautions to ensure best results with riveted joints. These are given below.

(1) The plate stress should be kept as low as possible.
(2) The rivet hole should be clean and free from cracks.
(3) The rivet spacing must not be too small.
(4) The rivet distance from the edge of the plate should be sufficient to ensure the local hole stresses have largely disappeared.
(5) The edges of the plate should be smooth and free from cracks.

Auxiliary Motors for High Performance Gliders. (E. Huttemann, Sportflieger, Vol. 9, No. 8, August, 1942, p. 175.) (116/6 Germany.)

The advantages of fitting an auxiliary motor to a glider are very great, since it would enable the pilot to search for suitable meteorological conditions of the atmosphere and render "target" flights more generally possible. The essential condition, however, is that the performance of the aircraft as a glider is not seriously jeopardised and that the engine can be started at will.

Early attempts were failures, the drag with the engine stopped being such that the rapid loss of height restricted possible glides. In order to save weight, no starter was fitted and the engine had then to be run continuously. Even at small throttle, the fuel weight to be carried restricted the possible range and the compression solution offered no advantages being both a poor aircraft and a worse glider.

A new design brought out by the Chemnitz gliding association appears to overcome these difficulties. Known as the C10 it is fitted with an 18 h.p. Krober engine placed inside the fuselage behind the pilot and driving a rear airscrew. This screw is fitted with hinged blades which fold inside the tail boom when the engine is stopped. Under these conditions, and with ventilating slot shut, the aircraft has a gliding angle of 1.22 at 85 km./h. and a rate of descent of .85 m./sec. at 65 km./h. With engine under operation, and ventilating slots open, a rate of climb of 1.9 m./sec. is possible.

Since the engine can be easily started by hand, it need only be in operation over restricted periods with the result that only a small quantity of fuel need be carried. The equivalent of one hour's continuous operation is considered sufficient, since it will enable the pilot to climb four to six times to an altitude of about 1,000 m. from which he can start a fresh glide. A machine of the type considered should prove of very great value since valuable gliding experience can be gained at very little cost.

The Realisation of the Aircraft Propeller Landing Brake. (A. V. der Muhll, Flugwehr u. Technik, Vol. 5, No. 2, Feb., 1943, pp. 51-54.) (116/7 Switzerland.)

Any propeller can be converted into a brake (negative thrust) either by reversing its direction of rotation or by a suitable change in pitch. The former method has been used on board ship for a very long time, but recently the variable pitch form has also been successfully applied in this field. On aircraft, the propeller brake was first considered for limiting the speed during a dive. Obviously only the variable pitch type çon be considered in this case. The experiments, however, proved unsuccessful for two reasons:—

(1) During a high speed dive, the negative thrust required is very large and it is difficult to provide the necessary stiffness for the blades and control mechanism without excessive weight.

(2) Unless the pitch change during the dive is very rapid, a considerable increase in r.p.m. will occur as the propeller passes through the region of small pitch (windmilling). Normal values of the r.p.m. will only return when the full negative pitch is reached. Even if the propeller could be designed to stand this speeding up over a period, there is a grave risk of the engine being damaged.

In order to limit the speed increase to less than 10 per cent., it is imperative that the full change in pitch (say from $+40^\circ$ to -30°) be carried out in less than 2 seconds, *i.e.*, at a minimum rate of 40°/sec.

Before the advent of the Escher-Wyss design, the maximum rate of change of pitch of existing types of variable pitch propellers averaged only 1° to 3°/sec. and such propellers were therefore totally unsuited for the serving as an air brake during a dive.

High rates of change of pitch are difficult to produce by electrical means. Propellers working on this principle usually employ an electric motor of about $\frac{1}{4}$ to $\frac{1}{2}$ h.p. sufficient for a rate of change of pitch of about 2°/sec. It is estimated that a pitch change rate of 30°/sec. would require about 12 h.p. assuming constant gear efficiency. In practice at least 15 h.p. would be required and it would be quite impossible to provide a satisfactory housing for such a motor together with the necessary reduction gear inside the propeller hub. According to the author, the only feasible method of providing the necessary power is by hydraulic means and for this purpose the Escher-Wyss design utilises a reserve of oil under high air pressure which is admitted directly to the propeller mechanism when the quick change of pitch is required. (For normal changes in pitch the ordinary circuit oil controlled by an automatic speed governor is employed.)

In the Escher-Wyss propeller the control lever, as usually fitted on hydraulically operated variable pitch propellers, is provided with a special gate, passage through which disconnects the governor and applies the high pressure system. The extra weight entailed for the braking control including oil storage cylinder is about 12 kg.

The maximum rate of change of pitch obtainable with the present Escher-Wyss propeller is of the order of 20°/sec. As already stated, this is not yet sufficient for a satisfactory diving brake, but very satisfactory for landing purposes at which the air speeds are much lower. As is well known, the Escher-Wyss propeller has been the standard equipment of the Swiss Air Force for a number of years. This propeller was designed from the start for eventual use as a brake and thus incorporated the necessary pitch range (about 70°).

The adaptation to actual braking during landing has however only been carried out comparatively recently. According to official tests on a standard single-seater fighter of the Swiss Air Force, the following average results were obtained (percentage basis):—

Run out	with no brakes	100
,,	with wheel brakes alone	61
,,	with propeller brake alone ...	28
,,	with combined wheel	17

The propeller brake thus reduces the run out length to less than one-third of the normal distance required with wheel brakes only. Since, moreover, the propeller brake becomes more efficient at high touch-down speeds, the run-out no longer increases as V^2 as it would do if only wheel brakes were utilised. If the old run out length is thus retained, it should be possible to increase the existing wind loading of aircraft very considerably and this represents, according to the author, the most important immediate development.

Although, as already stated, the original field of application of the propeller brake was thought to be speed limitation during a dive, interest in this development has somewhat faded since satisfactory aerodynamic brakes are now available as an alternative solution for this purpose. This, however, does not imply that the present rate of change of pitch of about 20°/sec. represents the limit of the Escher-Wyss design, which is still in progress of development.

The Take-off of Heavily Loaded Aircraft. (H. L. Studer and F. Widmer, Flugwehr und Technik, Vol. 5, 1943, pp. 48-51 and 75-77.) (116/8 Switzerland.)

As is well known, the length of take-off run for heavily loaded aircraft presents serious difficulties, whilst the actual landing, especially if propeller air brakes are fitted can be carried out in much shorter distances. This renders the lay-out of the aerodrome uneconomical and focuses attention on any means by which the take-off run can be shortened.

Now the take-off run consists of two distinct parts:—

1. Accelerated ground run till the aircraft becomes airborne (unstick).
2. Accelerated climb to an altitude of 20 m. followed by steady climb.

It is relatively easy to obtain an expression for the ground run (unsticking) provided certain simplifying assumptions are made, such as

(*a*) Constant angle of incidence.
(*b*) Linear decrease of static propeller thrust with increase in dynamic head.
(*c*) Constant coefficient of friction.

For the case of take-off from a horizontal surface, the distance d for unsticking is given by

$$d=\frac{m}{\rho F\,(k/F-C_D+\mu C_L)}\log\left\{1+V_T^{\,2}\frac{\rho F\,(k/F-C_D+\mu C_L)}{2m\,(S_o/m-\mu g)}\right\} \quad . \quad (1)$$

where m = mass of aircraft.
F = wing area.
μ = coefficient of friction.
S_o = static propeller thrust.
S = d° at dynamic pressure q.
$= S_o + k\,.\,q$.
V_T = minimum airborne speed.

For a given aircraft, therefore, d becomes a minimum if $\mu C_L - C_D$ is a maximum and this determines the incidence required for shortest unstick.

From the envelope polar diagram of the aircraft (taking into account flap deflection, ground effect and air drag of undercarriage) $\mu C_L - C_D$ can be plotted against C_L with μ as parameter and the optimum value of C_L determined.

In the case of a special aircraft considered by the author the following values were obtained :—

C_L opt.	μ	Weight of Aircraft.	10 tons.
·5	·05	F	55 m.2
·9	.10	N	4,000 h.p.
1.4	.15	—	
1.75	.20	—	

These optimum values are relatively low provided $\mu < .15$. Moreover, C_L opt. is considerably smaller than the max. C_L obtainable with this aircraft.

C_L max.	C_D	Flap deflection.	Aileron (acting as additional flap).
1.4	.15	0°	0°
1.8	.22	20°	7°
2.25	·33	45°	15°

It thus appears that large incidence or flap operation on smooth runways is definitely harmful as regards unstick distance, the increase in lift being more than balanced by the accompanying increase in drag, thus causing a decrease in $(\mu C_L - C_D)$.

(If it were possible to increase C_L without spoiling the lift-drag ratio, *e.g.*, by boundary layer suction, the unstick distance could be considerably reduced.)

In the above calculations, constancy of C_L during the ground run is assumed, the actual unsticking taking place at the same incidence. Since, however, the aircraft has a considerable lift reserve, the unstick distance could be reduced by accelerating at C_L opt. only until the dynamic pressure corresponding to C_L max. is reached, and altering the incidence suddenly at this point so as to obtain maximum lift. In this way the unstick run given by equation (1) can be reduced by about 10-15 per cent., leading to the following values for the particular aircraft considered.

μ	Unstick distance (m.)
0.0	210
.1	280
.2	360

To this distance must be added the ground distance corresponding to a climb to 20 m. The first part of this climb would be carried out under accelerated conditions and the shortest ground distance corresponds to steady climb conditions being reached at 20 m. altitude. For the particular aircraft considered, the author estimates an optimum distance of 185 m. for this purpose, the total starting distance thus ranging from 390 to 540 m., depending on state of surface of aerodrome. It should be emphasised that these are optimum figures and are liable to an increase of at least 100 m. by relatively slight departures from the best take-off technique.

As already stated, a marked reduction of these distances by purely aerodynamic means (*i.e.*, by design features incorporated in the aircraft) appears possible if boundary layer control by suction could be adopted.

As experiments in this direction have not yet led to a practical solution, the author briefly reviews other possible aids for take-off such as :—

1. Temporary Increase of Engine Power by Boost Considerably Above Present-Day Limits.

This requires special fuels, supplementary engine cooling by means of a fan, and a possible redesign of the engine. Although promising, this method entails considerable development work.

2. Catapult Starts.

Lack of mobility of equipment is the main drawback.

3. Rocket Starts.

This has proved of considerable help, provided the equipment can be jettisoned after take-off. The author states, however, that the fuel consumption of such devices is heavy and their utilisation not free from fire risk.

4. Take-off from an Inclined Surface.

If the aircraft is moving down an inclined plane, the propeller thrust is added by the weight component and the distance d for unsticking becomes:—

$$d=\frac{m}{\rho F\ (k/F-C_D+\mu C_L)}\times\log\left[\frac{S_o/mg-\mu\cos\gamma+\sin\gamma+\frac{\frac{1}{2}\rho V_T{}^2}{mg/F}(k/F-C_D+\mu C_L)}{S_o/mg-\mu\cos\gamma+\sin\gamma}\right]\quad(2)$$

where γ=slope of surface, the other factors having the same significance as in equation (1).

It appears that a slope as small as 20° is already sufficient to reduce the unstick distance by more than 50 per cent. The saving in aerodrome space is however nothing like as much, since the aircraft will leave the slope tangentially and continue to lose height over a considerable distance before the climb is finally started. Thus, for the particular aircraft considered, $\mu=.1$, normal unstick distance 280 m., the distance is reduced to about 120 m. for a slope of 20°. The lowest part of the subsequent flight trajectory occurs, however, at about a distance of 300 m. from the starting point. At this point the aircraft is flying horizontally for the moment and about 75 m. below the level of the starting point. A further horizontal distance of about 100 m. is required before the 20 m. obstacle can be cleared.

The total horizontal distance is thus of the order of 400 m. against 465 for the normal start. Even with a 60° slope, the horizontal distance is still 325 m. It is obvious that in this method, the advantage of the short-unstick run on the inclined plane is largely lost by the very flat subsequent flight trajectory.

An obvious solution of this difficulty would be to provide the aircraft with a concave contacting surface as soon as it leaves the inclined plane. By rolling along this surface, the aircraft assumes the horizontal position in a shorter distance than is possible under free flight conditions. Similarly the flat inclined surface would be provided with a preliminary convex entry so as to provide extra acceleration.

The accelerated motion of the aircraft under the combined action of propeller thrust and gravity when rolling over a surface of radius of curvature R is governed by the equation.

$$\frac{m}{2}\,\frac{d\,(V^2)}{ds}=S+mg\sin\gamma-W_R-W\quad(3)$$

where W_R=friction force on ground.
$=\mu\,\{\,mg\cos\gamma\pm mV^2/R-C_a qF\,\}$.
W=air drag$=C_D qF$.
$q=\frac{1}{2}\rho V^2$.

The other symbols have the same significance as in equation (1).

Equation (3) is easily solved if R=constant (circular arc). In the case of the exit arc (γ=0 at exit) we then have a relationship between the slope γ and the velocity V_e at entry in order to produce the unstick velocity V_T at exit for a given radius of curvature R_2. Similarly, for the entry arc with horizontal entry at zero speed, we obtain a connection between the velocity and slope at the end of the arc for a given radius of curvature R_1. Both R_2 and R_1 are chosen as small as possible, the final limits being propeller ground clearance and unsticking under centrifugal force respectively. Naturally, if laid out in hilly country both R_1 and R_2 would also be chosen to approximate to available contours as closely as possible. If the slope of the flat portion of the runway has been settled, this must equal both the exit slope of the convex entry and the entry slope of the concave exit. The length of flat runway required to produce the necessary acceleration then follows as a special case of (3).

The author has carried out a number of calculations for such S shaped runways for the particular aircraft in question, with the following results ($\mu = .1$) :—

Slope of flat portion.	Total length (m.)	Max. height (m.)
10°	185	30 m.
20°	150	45 m.
30°	130	60 m.
60°	115	95 m.
90°	110	130 m.
0°	280	0

With a main slope of 20° therefore, the total take-off distance (unstick + climb to 20 m.) becomes 150 + 185 m. = 335 m. against 400 m. for a flat inclined plane and 465 m. for the level start.

It will be noted that slopes in excess of about 20° unless they are naturally available, scarcely justify the additional expenditure. Whilst the S shaped 20° slope has slightly increased the horizontal unstick distance compared with the flat slope of equal inclination (150 m. against 130 m.), the aircraft is now ready to climb, whilst in the latter case change over to climb in the free trajectory required a further 150 m. of horizontal travel. Moreover, the total loss in height with the S shaped take-off surface is only 45 m. against 75 m. with the flat inclined plane.

In the author's opinion, runways of the type considered are well worthy of consideration especially in hilly country such as Switzerland.

The Effectiveness of the Propeller as a Landing Brake. (A. v. der Muhll, Flugwehr und Technik, Vol. 5, No. 8, August, 1943, pp. 211-217.) (116/9 Switzerland.)

The author assumes that at the moment of touch-down, the propeller is switched over to negative thrust at full throttle and maintained at this setting till the aircraft comes to rest. During the run out, the thrust will diminish from the value corresponding to touch-down speed to the final static value (aircraft at rest). Over this range, the mean propeller braking force can be taken with sufficient accuracy as the average of these limiting values as given on the propeller thrust characteristic. For a 1,000 h.p. engine, a mean braking force of the order of 750 kg. is easily obtained. By substituting mean values for the air drag and ground friction, the length of run out e follows from the equation

$$\frac{M}{2} V_L^2 = e\,(W_m + R_m + S_m)$$

M = mass of aircraft.
V_L = touch-down speed.
W_m = mean value of air drag } during run out.
R_m = ,, ,, ground friction
S_m = ,, ,, negative thrust

Substituting the corresponding non-dimensional coefficients the author obtains the following expression for e :—

$$e = \frac{G/F}{g\rho/2\left[C_{Dr} + \mu\left(2C_{Lt} - C_{Lr}\frac{F-f}{F}\right) + \frac{S_1 + S_2}{\rho/2 \,.\, V_T^2 F}\right]}$$

where G = weight of aircraft.
F = wing area.
C_{Dr} = drag coefficient during rolling at rolling incidence.
C_{Lt} = lift coefficient at touch down incidence.
C_{Lr} = ,, ,, rolling incidence.

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f = wing area under negative slip stream and therefore without lift.
S_1 = negative thrust at touch down.
S_2 = static negative thrust.
V_T = touch down speed.
μ = coefficient of ground friction.

It will be noted that the use of the propeller as a landing brake reacts favourably on the operation of the wheel brakes, since the reversed slip stream destroys the lift over a considerable proportion of the wing surface (~ 50 per cent.) and thus increases the ground reaction.

By substituting mean values for the actual resistance forces, the calculation is very much simplified without serious loss in accuracy. Thus the direct measurements on landing runs with propeller brakes agree within 5 per cent. of the theoretical predictions. The following calculated results were obtained:—

Aircraft Type.	Touchdown Speed (km/h.)	Run-out Length (m.) No Brakes.	Wheel Brakes only.	Prop. only.	Wheel and Prop.
A	121	535 (800)	277 (467)	146 (195)	108 (154)
B	126	438 (602)	258 (398)	136 (176)	83 (118)
C	126	506 (673)	149 (235)	146 (194)	81 (115)
D	184	927 (1270)	547 (842)	218 (278)	147 (203)
E	184	1073 (1425)	316 (498)	231 (298)	144 (198)

The figures in brackets give the corresponding runs when landing at 20 per cent. excess speed.

Hard grass level surface

μ = .3 for standard undercarriage, wheel brakes only.
= .4 ,, ,, wheel and propeller brake.
= .45 tricycle undercarriage.

Particulars of the aircraft utilised are given below:—

	A	B	C	D	E
		Low Wing Monoplane.			
Aircraft Type.	Biplane Fixed Tail Wheel.	Tail Wheel. Retractable.	Nose Wheel. Retractable.	Tail Wheel Retractable.	Nose Wheel Retractable.
G (kg.)	2700	2600	2600	2600	2600
F (m.^{2})	32	18	18	8.5	8.5
f/F (per cent.) ...	40	50	50	50	50
H.P.	850	1000	1000	1000	1000
Diam. prop. (m.)...	3.25	3.10	3.10	3.10	3.10
Number of blades...	3	3	3	4	4

Types C and D are fitted with tricycle undercarriages.
Types D and E are high speed models.

It will be noted that the run-out with the propeller as the only brake is always considerably less than if the wheel brakes only are operated (in some cases less than half). With combined wheel and propeller brake the run-out length is still further reduced and for type D amounts to almost one quarter the distance for wheel brakes only.

A further advantage of the propeller brake is the fact that it counteracts the tendency of the standard undercarriage to nosing over. Moreover, by reversing the pitch already during the approach glide, the angle of the latter can be controlled at will by simply opening the throttle.

The results show that even at 20 per cent. excess landing speed, the run-outs with the propeller brake are appreciably less than those corresponding to standard touch down speed and wheel brakes only. It will thus be possible to increase the wing loading of future aircraft very considerably and thus obtain higher maximum speeds for the same engine power.

The Influence of Reynolds Numbers at High Mach Numbers. (A. Ferri, Atti di Guidonia, No. 67-69.) (Luftwissen, Vol. 10, No. 3, March, 1943, pp. 90-91.) (116/10 Italy.)

The experiments were carried out in the high speed wind tunnel at Guidonia on three brass spheres of 40, 60 and 80 mm. diameter supported on a rear spindle and on two steel cylinders of 15 and 30 mm. diameter respectively which passed through the air jet. Both the total drag and pressure difference between the front stagnation point and a variable point at the rear were measured. The pressure distribution on similar models which could be rotated and which were provided with suitable holes was also determined. The following results were obtained:—

$$Re\ 20-80\times 10^4.$$

Resistance of Spheres.

For $M=.8$ and .9, the resistance coefficient is constant over the whole Re range, amounting to .325 and .340 respectively.

At $M=.7$ there is a small diminution of C_D with Re, the coefficient decreasing from $C_D=.3$ ($Re=20\times 10^4$) to $C_D=.28$ at $Re=70\times 10^4$.

At Mach numbers between $M=.3$ and $M=.67$, C_D diminishes at first slowly with increase in Re. At a certain critical Re, C_D falls very rapidly to about one third to one quarter of its original value and then undergoes a slight subsequent rise.

The results are given in the accompanying table and generally confirmed by pressure measurements and striation photographs of the flow.

It appears that the critical drag at low Mach numbers (up to $\sim .6$) is mainly due to the frontal dynamic head, the rear of the sphere being practically at static pressure (adhesion of flow). At higher Mach numbers, however, a lateral shock wave is set up leading to a region of considerable negative pressure over the rear surface of the sphere and accounting for the increase in drag observed.

It is clear that under these conditions the sphere can no longer be used as a turbulence indicator.

It should be emphasised that the results primarily apply to spheres and cylinders and that for aerofoils, the C_D value at $M > .7$ is likely to be affected by Re (thickness of boundary layer).

Results on Spheres.

$Re\times 10^4$	C_D Mach Numbers. .3	.4	.5	.6	.67	.7	.8
20	.245	.250	.257	.270	.280	.30	.325
30	.237	.245	.255	.260	.270	.30	
40	.180	.220	.240	.250	.260	.30	
45	.060	.07	.220	.240	.250	.297	
50	—	.06	.190	.230	.240	.296	
55	—	.07	.075	.215	.230	.292	Constant
60	—	.075	.070	.190	.220	.290	
65	—	—	.080	.095	.205	.287	
70	—	—	.090	.080	.185	.280	
75	—	—	.095	.090	.140	—	
80	—	—	—	—	.100	—	
85	—	—	—	—	.110	—	.325

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No. 62.

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		AERO AND HYDRODYNAMICS.
1330	Stemmer, J. ...	*The Development of Jet or Rocket Propulsion.* (Flugwehr und Technik, Vol. 3, No. 7 and No. 8, July-Aug., 1941, pp. 166-170 and 191-195.)
1902	Nevzorov, J. J. ...	*Distribution of Aerodynamic Load on the Tail Surfaces of an Aircraft.* (Trans. C.A.H.I., No. 477, 1940.)
1903	Euler, H.	*Shock Losses and Resistance Loss Coefficient in Pipe Lines and Conduits.* (Archiv. f. das Eisen, No. 11, May, 1934, pp. 430-438.)
1904	Pinl, M.	*On the Theory of Compressible Flow — III.* (Z.A.M.M., Vol. 22, No. 6, Dec., 1942, pp. 305-311.)
1905	Oswatitsch, K. ...	*Condensation Phenomena in Supersonic Nozzles.* (Z.A.M.M., Vol. 22, No. 1, Feb., 1942, pp. 1-14.)
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1899	Lundberg, B. O. ...	*A General Description of the J-22 (Swedish) Aeroplane.* (By the Chief Designer.)
1901	——	*Jettisonable Auxiliary Wing for Facilitating Take-off.* (*German Patent* 719,857.) (Flugsport, Vol. 34, No. 12, 10/6/42, p. 121.)
1906	Ruhlemann, E. ...	*The Development of Technical Equipment in Aircraft.* (Luftwissen, Vol. 10, No. 2, March, 1943, pp. 83-85.)
1910	Ebner, H.	*Problems Appertaining to Marine Aircraft.* (Luftwissen, Vol. 9, No. 5, May, 1942, pp. 142-154.)
		MATERIALS AND ELASTICITY.
1907	Thum, A. ... Petri, O.	*Stiffness and Deformation of Box Sections with Ribs, Perforated Walls or Impeded Warping of the Section.* (V.D.I., Forschungsheft, No. 409, July-Aug., 1941.)
1912	Jenckel, E.	*Systematics of Mixed Polymers.* (Z. Phys. Chemie., Vol. 190, No. 1, Nov., 1941, pp. 24-42.)

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		INSTRUMENTS.
1898	Lorenz, H. ...	... *Theory of the Bourdon Tube Pressure Gauge.* (Phys. Zeit., Vol. 18, No. 6, 5/3/17, pp. 117-121.)
1913	Meister, F. T.	.... *Vibration Table for Dynamic Testing in the Audio-Frequency Ranges.* (Akust. Zeit., Vol. 7, March, 1942, pp. 51-56.)
		PRODUCTION.
1888	——	... *Beading Tool (Notes for Workshop and Aerodrome).* (Flugsport, Vol. 34, No. 7, 1/4/42, pp. 100-101.)
1889	——	... *Universal Necking Tool for Ball and Roller Bearing (Notes for Workshop and Aerodrome).* (Flugsport, Vol. 34, No. 7, 1/4/42, pp. 101-102.)
		WIRELESS AND ELECTRICITY.
1894	Pintsch, J. ...	... *Automatic Landing Direction Indicator for Aerodromes.* (*German Patent* 728,094.) (Flugsport, Vol. 35, No. 3, 3/3/43, p. 195.)
1897	Ponomarev, L. I. ...	*Comparison of Electrical and Mechanical Relaxation Times.* (J. Tech. Phys., U.S.S.R., Vol. 10, No. 7, 1940, pp. 587-598.)
1900	Blaich ...	... *What are the Results of Freezing the Electrolyte in Accumulator Batteries.* (A.T.Z., Vol. 45, No. 23, Dec., 1942, pp. 641-645.)
1909	Kusters, W.	... *Measurements of the Dielectric Properties of Ceramic Insulating Materials with Centimetre Waves.* (H.F.T., Vol. 59, No. 5, May, 1942.)
1917	——	... *Wireless Beacon Array for Guiding Aircraft on a Given Path.* (*German Patent* 712,030.) (Flugsport, Vol. 34, No. 7, 1/4/42, p. 108.)
		MISCELLANEOUS.
1891	——	... *Sound-Proofed Shooting Range.* (Z.V.D.I., Vol. 86, No. 49-50, Dec., 1942, p. 748.)
1914	Collatz ...	... *A Natural Interval for the Numerical Integration of Systems of Linear Differential Equations.* (Z.A.M.M., Vol. 22, No. 4, August, 1942, pp. 216-225.)

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THEORY AND PRACTICE OF WARFARE.

General Strategy.

ITEM NO.	R.T.P. REF.		TITLE AND JOURNAL.
1	12412	G.B.	*Ship Flying and Aircraft Carriers—III.* (P. Bethell, Engineering, Vol. 156, No. 4,047, 6/8/43, pp. 101-105, 110.)
2	12448	G.B. and U.S.A. ...	*Allied Moves in the Pacific.* (Aeroplane, Vol. 65, No. 1,676, 9/7/43, pp. 34-36.)
3	12460	Germany ...	*The Battle for Kerch.* (G. Soldan, Coast Artillery Jnl., Vol. 86, No. 2, March-April, 1943, pp. 40-44.)
4	12501	U.S.A. ...	*Problems of Global Air War.* (N. F. Silsbee, Mech. Eng., Vol. 65, No. 5, May, 1943, pp. 313-320.)
5	12550	U.S.A. ...	*Proposal to Use Gliders for Anti-Submarine Work.* (American Aviation, Vol. 6, No. 22, 15/4/43, p. 22.)
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12	13113	U.S.A. ...	*Germany Can be Bombed Out of the War.* (P. Masefield, American Aviation, Vol. 7, No. 4, 15/7/43, pp. 31-38.)
13	13163	U.S.A. ...	*The Application of Air Power.* (E. P. Sorensen, Mechanical Engg., Vol. 65, No. 8, Aug., 1943, pp. 549-552.)

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14	12444	G.B.	*R.A.F. Central Gunnery School.* (Aeroplane, Vol. 65, No. 1,676, 9/7/43, pp. 41-43.)
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16	12547	U.S.A. ...	*Organisation of the American Army Air Forces (Chart).* (American Aviation, Vol. 6, No. 22, 15/4/43, p. 16.)
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18	12554	U.S.A. ...	*A New Low Pressure Chamber (Strato Trainer) for Training High Altitude Crews.* (American Aviation, Vol. 6, No. 22, 15/4/43, p. 60.)
19	12557	U.S.A. ...	*Ordnance Field Service—Connecting Link Between Producer and Soldier.* (J. S. Hatcher, S.A.E. Journal, Vol. 51, No. 1, July, 1943, pp. 24-25, 51-52.)
20	12594	G.B.	*R.A.F. Elementary Flying Training Schools.* (Canadian Aviation, Vol. 16, No. 3, March, 1943, pp. 74-78, 88.)
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27	12433	G.B. ...	*Design for Production.* (L. R. Morphew, Aeroplane, Vol. 65, No. 1,678, 23/7/43, pp. 96-97.)
28	12497	Canada ...	*Aircraft Electrical Systems.* (R. P. Bell, Canadian Aviation, Vol. 16, No. 4, April, 1943, pp. 96, 102-104.)
29	12531	G.B. ...	*D.H. Mosquito (Wing Assembly, Tail Plane, Fin and Flaps, Undercarriage, etc.).* (W. E. Goff, Aircraft Prod., Vol. 5, No. 57, July, 1943, pp. 315-327.)
30	12535	U.S.A. ...	*Jettison Tanks for Lockheed Lightning.* (Aircraft Prod., Vol. 5, No. 57, July, 1943, pp. 333-337.)
31	12553	U.S.A. ...	*Multi-Purpose Aircraft Design Utilising a Detachable Fuselage (Deysher-Hutts Plane).* (American Aviation, Vol. 6, No. 22, 15/4/43, pp. 46-54.)
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33	12598	U.S.A. ...	*Problems in Aircraft Structional Research.* (F. R. Shanley, published in full in Aircraft Engineering, July, 1943, pp. 200-206, A.S.M.E. Preprint, June, 1943.)
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35	12791	U.S.A. ...	*Automatic Pilot Seat to Reduce Pilot's "Blackout" (Recumbent Position Obtained Automatically with Release of Bomb).* (S. R. Winters, Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, pp. 87-90.)
36	12850	U.S.A. ...	*Aircraft Interphone.* (Automotive Industries, Vol. 89, No. 2, 15/7/43, p. 44.)
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38	13026	G.B. ...	*Trends of British Bomber Design.* (J. I. Waddington, Aero Digest, Vol. 42, No. 4, April, 1943, pp. 223-227, 416.)
39	13060	Canada ...	*Moulded Plywood Anson V.* (Aircraft Production, Vol. 5, No. 54, April, 1943, p. 202.)
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41	12388	Germany ...	*Flight Comparison Between D. 30 ("Cirrus") and "Horten IV" Sail Planes.* (Flugsport, Vol. 35, No. 11, 14/7/43, pp. 141-142.)

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43	12623	U.S.A. ...	*Fighter Planes Flying from U.S. to Africa (Extra Fuel Tank Used).* (American Aviation, Vol. 6, No. 24, 15/5/43, p. 15.)
44	12738	U.S.A. ...	*Testing the Helicopter for Anti-Submarine Warfare.* (American Aviation, Vol. 7, No. 2, 15/6/43, p. 22.)
45	12869	G.B.	*Atlantic Record Flights.* (Times Trade and Engineering, Vol. 53, No. 952, June, 1943, p. 34.)

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54	12619	U.S.A. ...	*Portable Starting Unit for Planes.* (American Aviation, Vol. 6, No. 23, 1/5/43, p. 53.)
55	12796	U.S.A. ...	*New Lifeboat for Airmen.* (Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, p. 128.)
56	12797	U.S.A. ...	*Portable Shelter for Air Force Personnel in Arctic Climates.* (Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, p. 132.)
57	12857	U.S.A. ...	*New Synthetic Rubber Boat to Protect Landing Gear Equipment.* (Automotive Industries, Vol. 89, No. 2, 15/7/43, p. 86.)
58	12992	U.S.A. ...	*Airborne Front Line Hangar.* (W. B. Larkin, Aero Digest, Vol. 42, No. 6, June, 1943, pp. 243, 330-331.)
59	12994	U.S.A. ...	*Concrete Fuel Tanks Lined Synthetic Rubber.* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 266-269.)

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60	13037	U.S.A. ...	*Portable Parachute Servicing Table.* (Aero Digest, Vol. 42, No. 4, April, 1943, p. 360.)

Armament and Maintenance of Military Aircraft.

61	12454	U.S.A. ...	*Armour Attack and Fire Effect.* (Coast Artillery Jnl., Vol. 86, No. 2, March-April, 1943, pp. 5-10.)
62	12464	U.S.A. ...	*Range Ballistic Corrections for Three-inch Guns.* (R. E. Baker, Coast Artillery Jnl., Vol. 86, No. 2, March-April, 1943, p. 60.)
63	12496	U.S.A. ...	*Fire Power of the Airacobra (Program).* (Canadian Aviation, Vol. 16, No. 4, April, 1943, p. 94.)
64	12588	U.S.A. ...	*Development of American Bomb Sight.* (Skyways, Vol. 2, No. 3, March, 1943, pp. 42-43, 82.)
65	12745	U.S.A. ...	*Bell Machine Gun Adapter (Recoil Absorption Device).* (American Aviation, Vol. 7, No. 2, 15/6/43, p. 60.)
66	12831	U.S.A. ...	*Cyclonite—New Explosive for Bombs and Shells.* (Industrial Eng. Chemistry, Vol. 21, No. 13, 10/7/43, p. 1,119.)
67	12846	U.S.A. ...	*Comparative Aircraft Armament Fire Power.* (Automotive Industries, Vol. 89, No. 2, 15/7/43, p. 31.)

Military Types of Aircraft (G.B.).

68	12356	G.B.	*Vickers' Spitfire IX (Silhouette).* (Inter. Avia., No. 871, 1, 26/5/43.)
69	12443	G.B.	*The Typhoon as a Bomber (Photograph).* (Aeroplane, Vol. 65, No. 1,676, 9/7/43, pp. 44-45.)
70	12494	G.B.	*British, Canadian and U.S. Military Aeroplane Specifications.* (Canadian Aviation, Vol. 16, No. 4, April, 1943, pp. 56-57.)
71	12502	G.B.	*Spitfire IX (Photograph).* (Mech. Eng., Vol. 65, No. 5, May, 1943, p. 319.)
72	12587	G.B.	*British Fighters and Bombers (Photograph).* (Skyways, Vol. 2, No. 3, March, 1943, pp. 49-63.)
73	12591	Canada ...	*Anson V (Photograph).* (Canadian Aviation, Vol. 16, No. 3, March, 1943, pp. 52-53, 88.)
74	12646	G.B.	*Bristol Beaufighter Torpedo Bomber.* (Inter. Avia., No. 865-866, 17/4/43, p. 16.)
75	12781	G.B.	*D.H. "Mosquito" (Recognition Details).* (Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, p. 56.)
76	12855	G.B.	*New Halifax Heavy Bomber.* (Automotive Industries, Vol. 89, No. 2, 15/7/43, p. 80.)
77	12868	G.B.	*Hawker Typhoon.* (Times Trade and Engineering, Vol. 53, No. 952, June, 1943, p. 33.)
78	12870	G.B.	*D.H. Mosquito.* (Times Trade and Engineering, Vol. 53, No. 952, June, 1943, p. 35.)
79	12990	G.B.	*The De Havilland "Mosquito."* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 227-232, 340-341.)
80	13061	G.B.	*The Mosquito IV Produced in Canada (Full Details).* (Canadian Aviation, Vol. 16, No. 6, June, 1943, pp. 79-86, 99-102, 116-117.)
81	13072	G.B.	*The D.H. Mosquito.* (M. W. Bourdon, Automotive Industries, Vol. 88, No. 12, 15/6/43, pp. 26-30, 89-90.)

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82	13078	G.B. ...	... *The Hawker Typhoon.* (Automotive Industries, Vol. 88, No. 12, 15/6/43, pp. 41, 90.)
83	13095	G.B. ...	... *Halifax Mark II, Series 1A.* (Times Trade and Engg., Vol. 53, No. 953, July, 1943, p. 36.)

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84	12355	U.S.A.	... *Vought F4U-2 "Corsair" Naval Fighter.* (Inter. Avia., No. 871, 26/5/43, p. 15.)
85	12391	U.S.A.	... *Consolidated Liberator II.* (Flugsport, Vol. 35, No. 11, 14/7/43, p. 151.)
86	12428	U.S.A.	... *North American B.2S. Mitchell (Photograph).* (Aeroplane, Vol. 65, No. 1,678, 23/7/43, p. 88.)
87	12429	U.S.A.	... *North American Mustang (Photograph).* (Aeroplane, Vol. 65, No. 1,678, 23/7/43, p. 89.)
88	12430	U.S.A.	... *The Martin PBM-3 Mariner (Photograph).* (Aeroplane, Vol. 65, No. 1,678, 23/7/43, p. 90.)
89	12434	U.S.A.	... *Vought SB2U-2 Vindicator Carrier-Borne Dive Bomber (Photograph).* (Aeroplane, Vol. 65, No. 1,678, 23/7/43, p. 100.)
90	12435	U.S.A.	... *Douglas SBD-3 Dauntless Light Bomber (Photograph).* (Aeroplane, Vol. 65, No. 1,678, 23/7/43, p. 101.)
91	12436	U.S.A.	... *Brewster SB2A-1 Buccaneer Dive Bomber (Photograph).* (Aeroplane, Vol. 65, No. 1,678, 23/7/43, p. 101.)
92	12437	U.S.A.	... *Boeing N2S2 Cadet Training Biplane (Photograph).* (Aeroplane, Vol. 65, No. 1,678, 23/7/43, p. 101.)
93	12441	U.S.A.	... *Two Motor High Wing Transport—the Cessna Loadmaster.* (Aeroplane, Vol. 65, No. 1,678, 23/7/43, p. 110.)
94	12442	U.S.A.	... *The "Liberator Commando."* (Aeroplane, Vol. 65, No. 1,678, 23/7/43, p. 110.)
95	12445	U.S.A.	... *The Lockheed Lightning (Photograph).* (Aeroplane, Vol. 65, No. 1,676, 9/7/43, p. 40.)
96	12470	U.S.A.	... *Popular Names for U.S. Military Aircraft.* (Coast Artillery Jnl., Vol. 86, No. 1, Jan.-Feb., 1943, p. 69.)
97	12492	U.S.A.	... *The Noorduyn Norseman.* (Canadian Aviation, Vol. 16, No. 4, April, 1943, pp. 52-53.)
98	12495	U.S.A. and G.B. ...	*Types of Aircraft Currently Used by American, Canadian and British Air Forces.* (Canadian Aviation, Vol. 16, No. 4, April, 1943, pp. 58-92.)
99	12503	U.S.A.	... *Douglas A-20 Havocs (Photograph).* (Mech. Eng., Vol. 65, No. 5, May, 1943, p. 317.)
100	12522	U.S.A.	... *Curtiss "Caravan."* (Commercial Aviation, Vol. 5, No. 4, April, 1943, pp. 94-102.)
101	12589	U.S.A.	... *Curtiss-Wright "Caravan" Transport.* (Skyways, Vol. 2, No. 3, March, 1943, pp. 73-75.)
102	12593	U.S.A.	... *Lockheed "Constellation."* (Canadian Aviation, Vol. 16, No. 3, March, 1943, p. 56.)
103	12602	U.S.A.	... *The New Vega PV-1 (Photograph).* (U.S. Air Services, Vol. 28, No. 4, April, 1943, p. 12.)

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104	12603	U.S.A. ...	*The Martin B-26 Marauder (Photograph).* (E. H. Forbes, U.S. Air Services, Vol. 28, No. 4, April, 1943, pp. 18-20.)
105	12607	U.S.A. and G.B. ...	*American and British Planes in the War News (Photos).* (American Aviation, Vol. 7, No. 1, 1/6/43, p. 22.)
106	12608	U.S.A. ...	*Cessna "Loadmaster" Steel Plywood Plane for Military Cargo.* (American Aviation, Vol. 7, No. 1, 1/6/43, p. 25.)
107	12622	U.S.A. ...	*New Navy Fighter—The Brewster F3A (Photograph).* (American Aviation, Vol. 6, No. 24, 15/5/43, p. 14.)
108	12629	U.S.A. ...	*United Air Lines Army Plane (Consolidated Cargo Transport) (Photograph).* (American Aviation, Vol. 6, No. 24, 15/5/43, p. 45.)
109	12632	U.S.A. ...	*North American Dive Bomber Version of Mustang Fighter (A-36) (Photograph).* (American Aviation, Vol. 6, No. 24, 15/5/43, p. 70.)
110	12644	U.S.A. ...	*Boeing B-17E/F.* (Inter. Avia., No. 865-866, 1, 17/4/43, pp.6-7.)
111	12645	U.S.A. ...	*Lockheed Ventura.* (Inter. Avia., No. 865-866, 1, 17/4/43, p. 7.)
112	12737	U.S.A. ...	*Brewster Buccaneer Dive Bomber (Photograph).* (American Aviation, Vol. 7, No. 2, 15/6/43, p. 16.)
113	12739	U.S.A. ...	*Vought Corsair and the Vega Ventura PV-1 (Photograph).* (American Aviation, Vol. 7, No. 2, 15/6/43, p. 25.)
114	12746	U.S.A. ...	*The Skyfarer.* (American Aviation, Vol. 7, No. 2, 15/6/43, p. 60.)
115	12749	U.S.A. ...	*The Martin Marauder B-26 as an All-Purpose War Plane.* (American Aviation, Vol. 7, No. 2, 15/6/43, p. 63.)
116	12752	U.S.A. ...	*Navy's Vought Corsair Plane.* (American Aviation, Vol. 7, No. 2, 15/6/43, p. 67.)
117	12755	U.S.A. ...	*Lockheed "Lightning" P-38 Carrying Two Droppable Fuel Tanks (Photograph).* (U.S. Air Services, Vol. 28, No. 5, May, 1943, pp. 16-17.)
118	12756	U.S.A. ...	*Navy's Latest Fighter—Brewster F.3.A. (Photograph).* (U.S. Air Services, Vol. 28, No. 5, May, 1943, p. 42.)
119	12757	U.S.A. ...	*Sikorsky Helicopter.* (Civil Aeronautics Journal, Vol. 4, No. 6, 15/6/43, pp. 76-77.)
120	12780	U.S.A. ...	*Curtiss "Commando" (Recognition Details).* (Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, p. 56.)
121	12787	U.S.A. ...	*Grumman "Wildcats" on Aircraft Carrier (Photo).* (Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, p. 65.)
122	12788	U.S.A. ...	*Navy HE. 1 Piper Aircraft Ambulance (Photo).* (Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, p. 66.)
123	12871	U.S.A. ...	*The U.S. Thunderbolt (P-47).* (Times Trade and Engineering, Vol. 53, No. 952, June, 1943, p. 36.)

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124	12878	U.S.A.	*New R.A.F. Types—The Lockheed, Vega, Ventura Medium Bomber.* (Aircraft Engineering, Vol. 15, No. 174, Aug., 1943, pp. 227-238.)
125	12982	U.S.A.	*The New Piper P.T. Trainer (Powered with Franklin Six-Cylinder Engine).* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 179-181, 331-332.)
126	12986	U.S.A.	*Lockheed "Lightning" High Altitude Fighter (Sectional Drawings).* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 202-203.)
127	13032	U.S.A.	*Boeing Strato Trainer.* (Aero Digest, Vol. 42, No. 4, April, 1943, pp. 258, 277.)
128	13034	U.S.A.	*North American A-36 Dive Bomber Version of Mustang (Photo).* (Aero Digest, Vol. 42, No. 4, April, 1943, p. 311.)
129	13057	U.S.A.	*Characteristics and Construction of the Lockheed Constellation Transport Plane.* (Aircraft Production, Vol. 5, No. 54, April, 1943, pp. 195-196.)
130	13062	U.S.A.	*C. 87 Liberator Express Transport (Photograph).* (Canadian Aviation, Vol. 16, No. 6, June, 1943, p. 92.)
131	13094	U.S.A.	*Vega Ventura Medium Bomber.* (Times Trade and Engg., Vol. 53, No. 953, July, 1943, p. 35.)
132	13115	U.S.A.	*Consolidated Vultee's New Flying Boat P4Y-1 (Photograph .* (American Aviation, Vol. 7, No. 4, 15/7/43, p. 60.)

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133	12647	U.S.S.R.	*U.S.S.R. Bombers (PE-2, DB-3, DB-3F).* (Inter. Avia., No. 865-866, 1, 17/4/43, pp. 17-18.)
134	12782	U.S.S.R.	*Russian "Stormovik" (Recognition Details).* (Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, p. 57.)
135	12785	U.S.S.R.	*Russian Fighters (Photo).* (Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, p. 61.)
136	12790	U.S.S.R.	*Russian SU-2 Bomber (Photo).* (Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, p. 67.)

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137	12354	Germany	*Me. 110 with Extra Tanks (Photo).* (Inter. Avia., No. 871, 1, 26/5/43.)
138	12359	Germany	*Messerschmitt Me. 209 and 109G.* (Inter. Avia., No. 871, 26/5/43, p. 18.)
139	12390	Germany	*Messerschmitt Me. 109 and 110, with Technical Drawings.* (Flugsport, Vol. 35, No. 11, 14/7/43, pp. 142-149.)
140	12432	Germany	*Me. 109 (Photograph).* (Aeroplane, Vol. 65, No. 1,678, 23/7/43, p. 95.)
141	12446	Germany	*Captured Junkers Ju. 87D1 Dive Bomber (Photograph).* (Aeroplane, Vol. 65, No. 1,676, 9/7/43, p. 39.)
142	12447	Germany	*Dornier Do. 217 E2 (Photograph).* (Aeroplane, Vol. 65, No. 1,676, 9/7/43, p. 37.)
143	12452	Germany	*Me. 323 Six-Engine Transport (Photograph).* (Aeroplane, Vol. 65, No. 1,676, 9/7/43, p. 31.)

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144	12592	Germany ...	*Focke-Wulf F.W. 190 A3 (Detailed Drawing).* (Canadian Aviation, Vol. 16, No. 3, March, 1943, pp. 54-55.)
145	12783	Germany ...	*Dornier Do. 18K (Recognition Details).* (Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, p. 57.)
146	12786	Germany ...	*Ju. 87-D (Photo).* (Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, p. 63.)
147	13031	Germany ...	*Messerschmitt 323 Troop Transport.* (Aero Digest, Vol. 42, No. 4, April, 1943, p. 252.)

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148	12431	Japan ...	*Mitsubishi OB-01 Two-Motor Bomber (Photograph).* (Aeroplane, Vol. 65, No. 1,678, 23/7/43, p. 92.)

Gliders.

149	12363	G.B.	*Nylon Tow Rope for Gliders.* (Plastics, Vol. 7, No. 75, August, 1943, p. 333.)
150	12438	G.B.	*Airspeed Horsa I Troop Carrying Glider (Photograph).* (Aeroplane, Vol. 65, No. 1,678, 23/7/43, p. 104.)
151	12449	Canada ...	*Waco CG-4A Glider Towed by Douglas Dakota (Montreal-Great Britain Historic Flights) (Photograph).* (Aeroplane, Vol. 65, No. 1,676, 9/7/43, p. 30.)
152	12450	U.S.A. ...	*U.S. Navy Amphibious Glider LRC-1 (Photograph).* (Aeroplane, Vol. 65, No. 1,676, 9/7/43, p. 30.)
153	12605	U.S.A. ...	*Twin-Engined CG-4A Glider (Detachable Engine).* (American Aviation, Vol. 7, No. 1, 1/6/43, p. 18.)
154	12651	U.S.A. ...	*New U.S.A. Transport Gliders (Waco CG 4 and 4A).* (Inter. Avia., No. 865-866, 1, 17/4/43, p. 28.)
155	12776	U.S.A. ...	*Glider Train.* (E. L. Howe, Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, pp. 40-42, 144.)
156	12789	U.S.A. ...	*The Bristol XLQ-1 U.S. Navy's Amphibious Glider (Photo).* (Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, p. 66.)
157	12980	U.S.A. ...	*New Troop Transport Glider Powered by Two Small Detachable Engines (North-Western C.G.-4a Troop Glider).* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 173, 334.)
158	13027	U.S.A. ...	*Taylorcraft T.G.6 Training Glider (Detailed Drawings).* (Aero Digest, Vol. 42, No. 4, April, 1943, pp. 228-229.)

A.A. and Artillery, etc.

159	12455	U.S.A. ...	*Limited Area Defence (Aerodrome Defence).* (Coast Artillery Jnl., Vol. 86, No. 2, March-April, 1943, pp. 11-17.)
160	12456	U.S.S.R. ...	*The Dual Rôle of Anti-Aircraft Artillery.* (Klochko, Coast Artillery Jnl., Vol. 86, No. 2, March-April, 1943, pp. 18-19.)

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161	12457	U.S.A. ...	*Navy Anti-Aircraft Guns (Photograph).* (Coast Artillery Jnl., Vol. 86, No. 2, March-April, 1943, pp. 20-21.)
162	12458	U.S.A. ...	*Notes on A.A. Gunnery.* (E. E. Farnsworth, Coast Artillery Jnl., Vol. 86, No. 2, March-April, 1943, pp. 26-30.)
163	12459	Spain ...	*Casemating Sea Coast Artillery.* (L. S. Tembleque, Coast Artillery Jnl., Vol. 86, No. 2, March-April, 1943, pp. 36-39.)
164	12461	U.S.A. ...	*A.A. Artillery with the Field Forces.* (D. S. Ellerthorpe, Coast Artillery Jnl., Vol. 86, No. 2, March-April, 1943, pp. 45-49.)
165	12462	U.S.A. ...	*Searchlight Control Trainer.* (C. O. Smith, Coast Artillery Jnl., Vol. 86, No. 2, March-April, 1943, pp. 56-57.)
166	12463	U.S.A. ...	40 *mm. A.A. Gun Tower.* (O. R. Fitz and W. P. Moss, Coast Artillery Jnl., Vol. 86, No. 2, March-April, 1943, pp. 58-59.)
167	12465	U.S.S.R. ...	*Anti-Aircraft Mobility (including Photographs of Russian Gun Mounts).* (Desnitsky, Coast Artillery Jnl., Vol. 86, No. 1, Jan.-Feb., 1943, pp. 4-8.)
168	12466	G.B. ...	*Britain's A.A. Defences.* (P. J. Mackesy, Coast Artillery Jnl., Vol. 86, No. 1, Jan.-Feb., 1943, pp. 34-37.)
169	12467	Germany ...	*Enemy Anti-Tank and Tank Tactics.* (F. L. Lazarus, Coast Artillery Jnl., Vol. 86, No. 1, Jan.-Feb., 1943, pp. 38-41.)
170	12469	U.S.A. ...	*Anti-Aircraft Spotting Apparatus.* (D. L. Lewis, Coast Artillery Jnl., Vol. 86, No. 1, Jan.-Feb., 1943, pp. 54-56.)
171	12471	Germany ...	*German Six-Barrelled Trench Mortar Captured by the Russians (Believed to be Electrically-Fired Rocket Gun) (Photograph).* (Coast Artillery Jnl., Vol. 86, No. 1, Jan.-Feb., 1943, p. 71.)
172	12472	Germany ...	*German Siege Guns of the Two World Wars.* (W. Ley, Coast Artillery Jnl., Vol. 86, No. 1, Jan.-Feb., 1943, pp. 13-20.)
173	12473	U.S.A. ...	*Identification of Merchant Ships.* (K. L. Brown, Coast Artillery Jnl., Vol. 86, No. 1, Jan.-Feb., 1943, pp. 28-33.)
174	12597	Canada ...	*New A.R.P. Warning Device.* (Canadian Aviation, Vol. 16, No. 3, March, 1943, p. 120.)
175	12904	G.B. ...	*The Plastics Hand Grenade.* (L. J. Falkenhagen, British Plastics, Vol. 15, No. 171, Aug., 1943, pp. 130-132.)
176	12935	G.B. ...	*Manufacture of the Six-Pounder Anti-Tank Gun Carriage.* (Machinery, Vol. 62, No. 1,600, 10/6/43, pp. 617-622.)
177	12972	U.S.A. ...	*Hints on Effective Camouflage.* (J. D. Campbell, Aero Digest, Vol. 42, No. 6, June, 1943, pp. 116-117, 224, 327-328.)
178	13127	G.B. ...	*Six-Pounder Anti-Tank Gun Carriage, Machining Operations.* (Machinery, Vol. 62, No. 1,602, 24/6/43, pp. 673-678.)

AERODYNAMICS AND HYDRODYNAMICS.

ITEM NO.	R.T.P. REF.		TITLE AND JOURNAL.
			General Aerodynamics.
179	12479	G.B.	*On a New Theory of Free Turbulence.* (*R.T.P.3, Translation No.* 1,686.) (H. Reichart, Jnl. Roy. Aeron. Soc., Vol. 47, No. 390, June, 1943, pp. 167-176.)
180	12549	U.S.A. ...	*N.A.C.A.'s Research Programme.* (American Aviation, Vol. 6, No. 22, 15/4/43, p. 20.)
181	12583	U.S.A. ...	*Aerodynamic Performance of the Towed Glider.* (A. Klemin and W. C. Walling, Aero Sciences, Vol. 10, No. 6, June, 1943, pp. 185-196.)
182	12585	U.S.A. ...	*Notes on Three-Dimensional Wing Flutter Analysis.* (F. Nagel, Aero Sciences, Vol. 10, No. 6, June, 1943, p. 199.)
183	12778	U.S.A. ...	*Bird and Insect Flight.* (F. W. Lane, Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, pp. 46-48, 160-161.)
184	12799	G.B.	*The Representation of Aircraft Wings, Tails and Fuselage by Semi-Rigid Structure in Dynamic and Static Problems.* (W. J. Duncan, R.M., No. 1,904, 6/2/43, pp. 1-23.)
185	12873	G.B.	*An Airscrew Engine Analogy—Similarity Between the Forces Acting on the Two.* (T. H. Day, Aircraft Engineering, Vol. 15, No. 174, Aug., 1943, pp. 218-222.)
186	13100	U.S.A. ...	*Effect of Turbulence and Channel.* (G. H. Keulegan and G. W. Patterson, J. of Research National Bureau of Standards, Vol. 30, No. 6, June, 1943, pp. 461-512.)
187	13119	U.S.A. ...	*New American Wind Tunnel.* (American Aviation, Vol. 7, No. 4, 15/7/43, p. 58.)
188	13301	U.S.A. ...	*Southern California Co-operative Wind Tunnel (Speeds Approximating Sound).* (Scientific American, Vol. 169, No. 2, Aug., 1943, p. 75.)
			Hydrodynamics.
189	12387	G.B.	*Steering Experiments (Contd.) (Ship's Rudder).* (R. W. L. Gawn, Engineer, Vol. 176, No. 4,570, 13/8/43, pp. 135-136.)
190	12416	G.B.	*Modern Liquid State Theory in Relation to Engineering.* (R. S. Silver, Engineering, Vol. 156, No. 4,047, 6/8/43, pp. 114-115.)
191	12877	G.B.	*Fluid Flow Through Restrictions (Discussion).* (Aircraft Engineering, Vol. 15, No. 174, Aug., 1943, p. 238.)
192	12921	G.B.	*Steering Experiments (Contd.).* (R. W. L. Gawn, Engineer, Vol. 176, No. 4,571, 20/8/43, pp. 145-147.)
193	13108	Switzerland ...	*Hydraulic Ram Working on Wave Propagation.* (Schweizerische Bauzeitung, Vol. 120, No. 17, 24 Oct., 1942, pp. 191-193.) (G. Eichelberg, Engineers' Digest, Vol. 4, No. 5, May, 1943, pp. 151-155.)
194	13629	G.B.	*Remote Control by Hydraulics.* (Aeronautics, Vol. 8, No. 6, July, 1943, pp. 48-49.)

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195	13747	G.B. ...	... *Applications of Fluid Dynamics.* (Mechanical World, Vol. 114, No. 2,955, 20/8/43, p. 210.)

AIRCRAFT AND ACCESSORIES.

Air Transport and Post-War Aviation.

ITEM NO.	R.T.P. REF.		TITLE AND JOURNAL.
196	12451	G.B. ...	... *Air Transport for London.* (R. F. Lloyd Jones, Aeroplane, Vol. 65, No. 1,676, 9/7/43, pp. 32-33.)
197	12490	U.S.A.	... *Bulk Cargoes by Plane.* (Trade Winds, April, 1943, pp. 8-9.)
198	12493	Canada	... *The Future of Aviation in Canada.* (Canadian Aviation, Vol. 16, No. 4, April, 1943, pp. 54, 94.)
199	12519	Canada	... *The Story of Trans-Canada Air Lines.* (W. A. Hunter, Commercial Aviation, Vol. 5, No. 4, April, 1943, pp. 48-68, 102.)
200	12571	U.S.A.	... *Future of Aviation (Excerpts from Paper).* (R. S. Damon, S.A.E. Journal, Vol. 51, No. 1, July, 1943, pp. 42, 69-70.)
201	12574	U.S.A.	... *Future of Air Commerce (Excerpt from Papers).* (M. H. Anderson, S.A.E. Journal, Vol. 51, No. 1, July, 1943, pp. 43-44.)
202	12610	U.S.A.	... *American Air Lines Opposed to Post-War Government Management.* (American Aviation, Vol. 7, No. 1, 1/6/43, pp. 32, 38.)
203	12611	U.S.A.	... *Plan for U.S. 20,000 Post-War Airports and Flight Strips.* (American Aviation, Vol. 7, No. 1, 1/6/43, p. 38.)
204	12628	U.S.A.	... *Post-War Aviation and Freedom of the Area.* (Kaemffert, American Aviation, Vol. 6, No. 24, 15/5/43, p. 35.)
205	12633	U.S.A.	... *C.A.B. Investigator of Post-War International Aviation.* (American Aviation, Vol. 6, No. 24, 15/5/43, pp. 13, 52-55.)
206	12740	U.S.A.	... *The Future of Air Transport (Report of Office of War Information).* (W. Thompson, American Aviation, Vol. 7, No. 2, 15/6/43, p. 29.)
207	12741	U.S.A.	... *Post-War Aviation (Wilbur Wright Memorial Lecture).* (E. P. Warner, American Aviation, Vol. 7, No. 2, 15/6/43, pp. 26-30.)
208	12747	U.S.A.	... *Transporting Food by Air.* (American Aviation, Vol. 7, No. 2, 15/6/43, p. 62.)
209	12758	U.S.A.	... *25 Years of U.S. Air Mail Service.* (Civil Aeronautics Journal, Vol. 4, No. 6, 15/5/43, pp. 60-61.)
210	12866	G.B. ...	... *A World Air Map.* (Times Trade and Engineering, Vol. 53, No. 952, June, 1943, pp. 31-32.)
211	12973	U.S.A.	... *Our Gigantic Global Air Transport Services (including Photographs of U.S. Transport Aircraft).* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 118-121, 342-344.)
212	12975	U.S.A.	... *Future Equipment of United Air Lines (Types of Aircraft Envisaged).* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 145, 315-316.)
213	13000	U.S.A.	... *America's Aviation To-morrow.* (E. S. Gorrell, Aero Digest, Vol. 42, No. 6, June, 1943, pp. 345-347.)

ITEM NO.	R.T.P. REF.		TITLE AND JOURNAL.
214	13012	U.S.A. ...	*Study of Air Transport by C.A.B.* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 449-451.)
215	13068	U.S.A. ...	*Post-War Aviation.* (Automotive Industries, Vol. 88, No. 12, 15/6/43, pp. 17-19, 138-140.)
216	13093	G.B.	*Future of Air Transport—S.B.A.C.s Proposals.* (Times Trade and Engg., Vol. 53, No. 953, July, 1943, p. 33.)
217	13111	U.S.A. ...	*Transportation of Foodstuffs by Air.* (C. Guest, American Aviation, Vol. 7, No. 4, 15/7/43, pp. 16-17, 42c.)
218	13116	U.S.A. ...	*Long-Range Airport Problem.* (E. J. Foley, American Aviation, Vol. 7, No. 4, 15/7/43, pp. 64-65.)

Civil and Experimental Aircraft Types.

219	12480	G.B.	*Post-War Transport Aircraft (31st Wilbur Wright Memorial Lecture).* (E. P. Warner, Jnl. Roy. Aeron. Soc., Vol. 47, No. 391, July, 1943, pp. 183-256.)
220	12570	U.S.A. ...	*Fundamental Requirements of Post-War Transport Aeroplanes (Excerpts from Paper).* (C. Froesch, S.A.E. Journal, Vol. 51, No. 1, July, 1943, pp. 42, 68-69.)
221	12612	U.S.A. ...	*Four Types of Planes Needed for Post-War Use.* (W. W. Davies, American Aviation, Vol. 7, No. 1, 1/6/43, p. 39.)
222	12648	France ...	*French Commercial Transport S.O. 161 and L. 631.* (Inter. Avia., No. 865-866, 1, 17/4/43, pp. 18-19.)
223	12649	France ...	*Le O 48 Experimental Aircraft without Ailerons (Flying Boat) (Controllable Vertical Guns Placed Near C.G. of Aircraft).* (Inter. Avia., No. 865-866, 17/4/43, p. 19.)
224	13011	U.S.A. ...	*Cessna "Loadmaster" Cargo Aircraft.* (Aero Digest, Vol. 42, No. 6, June, 1943, p. 449.)
225	13033	U.S.A. ...	*Norduyn UC-64 Cargo Transport (Photo).* (Aero Digest, Vol. 42, No. 4, April, 1943, p. 311.)
226	13092	G.B.	*Plans for Post-War Aircraft.* (Times Trade and Engg., Vol. 53, No. 953, July, 1943, p. 32.)
227	13114	U.S.A. ...	*Proposed Characteristics for Future Aeroplanes.* (American Aviation, Vol. 7, No. 4, 15/7/43, p. 42b.)

General Design—including Patents.

228	13022	U.S.A. ...	*Notes on Hinge Design.* (M. D. Giovanni, Aero Digest, Vol. 42, No. 4, April, 1943, pp. 211, 416.)
229	12525	U.S.A. ...	*Details of Plywood Construction on P.T. 26.* (Commercial Aviation, Vol. 5, No. 4, April, 1943, p. 112.)
230	12520	U.S.A. ...	*"Plastic" Aircraft.* (Commercial Aviation, Vol. 5, No. 4, April, 1943, pp. 80-86.)
231	12516	U.S.A. ...	*Uses of Plywood in Aircraft (Discussion on Paper).* (Mech. Eng., Vol. 65, No. 5, May, 1943, p. 373.)
232	12744	U.S.A. ...	*Snap Vent Made of Lumarith Plastics (Photograph).* (American Aviation, Vol. 7, No. 2, 15/6/43, p. 58.)

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233	12694	U.S.A. ...	*Transparent Plastic Vent for Aeroplane and Glider Cabins.* (Modern Plastics, Vol. 20, No. 7, March, 1943, p. 75.)
234	12856	Germany ...	*Instrument Panel Behind the Pilot (New German Patents).* (Automotive Industries, Vol. 89, No. 2, 15/7/43, p. 86.)
235	12620	U.S.A. ...	*Glass Aeroplane (American Patent).* (American Aviation, Vol. 6, No. 23, 1/5/43, p. 58.)
236	12393	Germany ...	*Patent Series No. 6. Emergency Trailing Antenna with Explosive Projector* (732,106). (Telefunken, Flugsport, Vol. 35, No. 11, 14/7/43, p. 39.)
237	12395	France ...	*Reversed Flow Radiator Cowl (Radiator Behind Pilot)* (733,564). (Bugatti, Flugsport, Vol. 35, No. 11, 14/7/43, p. 39.)
238	12398	Germany ...	*Cowling Clip* (732,795). (Junkers, Flugsport, Vol. 35, No. 11, 14/7/43, p. 38.)
			Stability and Control.
239	12875	G.B. ...	*The Lateral Stability of Aeroplanes—A New Geometrical System of Analysis.* (Aircraft Engineering, Vol. 15, No. 174, Aug., 1943, pp. 228-233.)
240	12876	G.B. ...	*The Problem of Wing Oscillation—Influence of Material and Size on Flexural and Torsional Frequencies.* (Z. Krzywoblocki, Aircraft Engineering, Vol. 15, No. 174, Aug., 1943, pp. 234-237.)
			Cabins and Windshields.
241	12563	U.S.A. ...	*Cabin Supercharging in Scheduled Airline Operation.* (R. L. Ellinger, S.A.E. Journal, Vol. 51, No. 1, July, 1943, pp. 241-247.)
242	12703	U.S.A. ...	*Impact Resistant Aircraft Wind Shields.* (G. L. Pigman, Modern Plastics, Vol. 20, No. 7, March, 1943, pp. 107, 150.)
243	12905	G.B. ...	*Bird Proof Wind Shields.* (British Plastics, Vol. 15, No. 171, Aug., 1943, p. 132.)
244	12759	U.S.A. ...	*New Wind Shield Protects Against Birds and Ice.* (Civil Aeronautics Journal, Vol. 4, No. 6, 15/3/43, p. 29.)
			Landing and Other Gear.
245	12572	U.S.A. ...	*High Pressure Hydraulic Systems (Excerpts from Paper).* (P. de Beixedon, S.A.E. Journal, Vol. 51, No. 1, July, 1943, pp. 43-71.)
246	12631	U.S.A. ...	*New Channel-Tread Wheel Tyres.* (American Aviation, Vol. 6, No. 24, 15/5/43, p. 57.)
247	12851	U.S.A. ...	*Aircraft Tyres Made with Nylon Cords.* (Automotive Industries, Vol. 89, No. 2, 15/7/43, p. 44.)
248	12979	U.S.A. ...	*Levered Suspension Landing Gear Development.* (J. A. Zagusta, Aero Digest, Vol. 42, No. 6, June, 1943, pp. 161-169, 321-324.)
249	13016	U.S.A. ...	*Bevel Gears in Aircraft (Pt. I).* (A. H. Candee, Aero Digest, Vol. 42, No. 4, April, 1943, pp. 167-176, 254-256.)
250	13089	G.B. ...	*Aircraft Gears.* (P. W. Brown and E. V. Farrar, Mechanical World, Vol. 114, No. 2,951, 23/7/43, pp. 105-109.)

ITEM NO.	R.T.P. REF.		TITLE AND JOURNAL.
			Propellers.
251	12394	Germany ...	*V.P. Propeller with Hydraulic Mechanism Mounted on Crankshaft Behind Propeller* (732,794). (V.D.M., Flugsport, Vol. 35, No. 11, 14/7/43, p. 37.)
252	12396	Germany ...	*V.P. Propeller Operated by Thermal Expansion of a Control Member* (733,062-733,063). (G.E.C., Flugsport, Vol. 35, No. 11, 14/7/43, p. 37.)
253	12397	Germany ...	*Manufacture of Hollow Light Alloy Propeller Blades* (733,133). (V.L.W., Flugsport, Vol. 35, No. 11, 14/7/43, p. 38.)
254	12537	G.B.	*Heat-Treating Airscrew Blades.* (Aircraft Production, Vol. 5, No. 57, July, 1943, p. 343.)
255	12573	U.S.A. ...	*Notes on the Selection and Installation of Aircraft Propellers (Excerpt from Papers).* (T. B. Rhines, S.A.E. Journal, Vol. 51, No. 1, July, 1943, pp. 43, 71-72.)
256	12641	G.B.	*The Rotol Four-Bladed V.P. Airscrew.* (Engineering, Vol. 156, No. 4,048, 13/8/43, pp. 125-128.)
257	12794	U.S.A. ...	*High Frequency Current for Heating Propeller Blade Shank.* (Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, p. 114.)
258	13017	U.S.A. ...	*Design and Manufacture of Curtiss Propellers.* (Aero Digest, Vol. 42, No. 4, April, 1943, pp. 179-180, 272-276.)
259	13023	G.B.	*British Propeller Development.* (G. E. Rochester, Aero Digest, Vol. 42, No. 4, April, 1943, pp. 212, 265-266.)
260	13025	U.S.A. ...	*Aero Product's Constant Speed Propeller.* (J. F. Haines, Aero Digest, Vol. 42, No. 4, April, 1943, pp. 219-220, 416.)
261	13041	G.B.	*Wood Airscrew Blades.* (Aircraft Production, Vol. 5, No. 54, April, 1943, pp. 155-158.)
262	13045	U.S.A. ...	*Curtiss-Wright Electrically Operated Contra-Rotating Airscrews (Hollow Steel Blades).* (Aircraft Production, Vol. 5, No. 54, April, 1943, p. 169.)
			Airfields, Seadromes and Servicing.
263	12524	U.S.A. ...	*Timber Connectors in Hangar Construction.* (H. Harvey, Commercial Aviation, Vol. 5, No. 4, April, 1943, pp. 110-112.)
264	12613	U.S.A. ...	*"Seadrome" Trans-Atlantic Route to England Proposed.* (American Aviation, Vol. 7, No. 1, 1/6/43, p. 55.)
265	12655	U.S.A. ...	*Flight Testing Equipment for Large Aircraft.* (W. F. Dickinson, S.A.E.J., Vol. 51, No. 4, April, 1943, pp. 139-147.)
266	12742	U.S.A. ...	*Time-Saving Method of Changing Tyres on War Cargo Transport Planes.* (American Aviation, Vol. 7, No. 2, 15/6/43, p. 45.)
267	12743	U.S.A. ...	*Mechanical Cement Spreader for Airports Dissembled for Air Shipment.* (American Aviation, Vol. 7, No. 2, 15/6/43, p. 48.)

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268	12750	U.S.A. ...	*The Maintenance Problem in International Air Transportation.* (E. J. Foley, American Aviation, Vol. 7, No. 2, 15/6/43, pp. 58, 71-72.)
269	12777	U.S.A. ...	*Construction of Roads and Airports.* (C. Fuller, Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, pp. 45, 150-152.)
270	12798	U.S.A. ...	*Maintenance Inspections.* (R. J. Curry, Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, pp.136-138.)
271	12867	G.B. ...	*Atlantic Seadromes.* (Times Trade and Engineering, Vol. 53, No. 952, June, 1943, p. 33.)
272	13008	U.S.A. ...	*Proposed Seadrome for Trans-Atlantic Travel.* (Aero Digest, Vol. 42, No. 6, June, 1943, p. 445.)
273	13067	Canada ...	*Goose Airport—World's Largest Flying Field.* (W. A. Shields, Canadian Aviation, Vol. 16, No. 6, June, 1943, pp. 87-90, 117-118.)
274	13075	U.S.A. ...	*Portable Hoist for Aircraft Service.* (Automotive Industries, Vol. 88, No. 12, 15/6/43, p. 40.)
275	13077	U.S.A. ...	*Brake Tester for Aircraft.* (Automotive Industries, Vol. 88, No. 12, 15/6/43, pp. 40, 92.)

ENGINES AND ACCESSORIES.

Named Types.

276	12440	Germany ...	*Modifications to the D.B. 601 (Engine).* (Aeroplane, Vol. 65, No. 1,678, 23/7/43, p. 109.)
277	12499	Canada ...	*New Lycoming Engine.* (Canadian Aviation, Vol. 16, No. 4, April, 1943, p. 146.)
278	12569	U.S.A. ...	*New Light Weight Marine Diesel Engine.* (J. C. Fetters, S.A.E. Journal, Vol. 51, No. 1, July, 1943, pp. 63-64.)
279	12650	France ...	*Béarn 6D 300 h.p. Cylinder In-line Air-Cooled Engine.* (Inter. Avia., No. 865-866, 17/4/43, pp. 19-20.)
280	12686	Germany ...	*The New B.M.W. Motor Cycle Combination with Wheel Drive.* (From A.T.Z., Vol. 45, No. 14, July 25, 1942, p. 400.) (St. von Szenásy, Engineers' Digest, Vol. 4, No. 3, March, 1943, pp. 93-95.)
281	12802	U.S.A. ...	*Excess Air and b.m.e.p. of Internal Combustion Engines.* (P. H. Schweitzer, Trans. A.S.M.E., Vol. 65, No. 3, April, 1943, pp. 159-163.)
282	12841	Germany ...	*New German Marine Engine (Deutz 12-Cylinder V Type Diesel).* (Automotive Industries, Vol. 89, No. 2, 15/7/43, pp. 19, 150.)
283	13071	U.S.A. ...	*Light Weight Diesel Engine for the Navy.* (J. C. Fetters, Automotive Industries, Vol. 88, No. 12, 15/6/43, pp. 25, 70-72.)
284	13117	U.S.A. ...	*New Curtiss-Wright Engine Synchronizer has Single Control.* (American Aviation, Vol. 7, No. 4, 15/7/43, p. 75.)
285	13131	G.B. ...	*Triple Expansion Engines for Liberty Ships.* (Machinery, Vol. 62, No. 1,602, 24/6/43, pp. 682-688.)

ITEM NO.	R.T.P. REF.		TITLE AND JOURNAL.
			Design and Installation.
286	12399	Germany ...	*Composite Metal-Rubber Bearing Support for Aircraft Engines* (733,768). (Metallgommi, Flugsport, Vol. 35, No. 11, 14/7/43, p. 38.)
287	12400	Germany ...	*Armour Protection for Cowled Radiator Installations* (732,105). (Heinkel, Flugsport, Vol. 35, No. 11, 14/7/43, p. 39.)
288	12542	U.S.A. ...	*Proposed Expressions for Root's Supercharger Design and Efficiencies.* (F. A. Hiersch, Preprints of Papers Presented at the A.S.M.E., June 14-16, 1943.)
289	12580	U.S.A. ...	*Factors Involved in Designing an Efficient Single Purpose Military Engine.* (C. E. Cummings, S.A.E. Journal, Vol. 51, No. 1, July, 1943, p. 62.)
290	12687	Switzerland ...	*The Thoma-Demag Hydraulic Gear for High Speed Diesel Engines.* (From Schweizerische Bauzeitung, Vol. 120, No. 14, Oct. 3, 1942, p. 164.) (Engineers' Digest, Vol. 4, No. 3, March, 1943, pp. 95-96.)
			Wear and Efficiency.
291	12544	U.S.A. ...	*Engine Wear and its Measurement in the Study of Lubrication.* (Preprints of Papers Presented at the A.S.M.E., June 14-16, 1943.)
292	12576	U.S.A. ...	*Exhaust Noise and Utilisation of Exhaust Energy.* (R. L. Leadbetter, S.A.E. Journal, Vol. 51, No. 1, July, 1943, pp. 28, 58.)
293	12577	U.S.A. ...	*Diesel Engine Fouling and Wear—the Effect of Fuel.* (G. H. Cloud and A. J. Blackwood, S.A.E. Journal, Vol. 51, No. 1, July, 1943, pp. 58-60.)
294	12711	G.B. ...	*Piston Skirt Deposits—New Methods for Evaluating and Recording.* (H. R. Luck and others, Automobile Engineer, Vol. 33, No. 439, Aug., 1943, pp. 321-325.)
			Testing and Maintenance.
295	12539	G.B. ...	*Engine Power Recovery. The Buick Feed-Back System of Testing Pratt and Whitney Aero Engines.* (Aircraft Prod., Vol. 5, No. 57, July, 1943, pp. 344-346.)
296	12568	U.S.A. ...	*Maintenance Problems for Submarine Diesel Engines.* (R. J. Moore, S.A.E. Journal, Vol. 51, No. 1, July, 1943, p. 63.)
297	12575	U.S.A. ...	*Procedures for Conservation of Anti-Freeze Solutions.* (S.A.E. Journal, Vol. 51, No. 7, July, 1943, pp. 74-75.)
298	12617	U.S.A. ...	*Need for Power Plant Test Stand.* (E. J. Foley, American Aviation, Vol. 6, No. 23, 1/5/43, p. 52.)
299	12652	U.S.A. ...	*Methods of Stress Determination in Engine Parts.* (C. Lipson, S.A.E.J., Vol. 51, No. 4, April, 1943, pp. 105-124.)
300	12676	Germany ...	*Gas Temperature Measurements in Internal Combustion Engines.* (From Z.V.D.I., Vol. 86, No. 29-30, July 25, 1942, pp. 461-466.) (H. Graff, Engineers' Digest, Vol. 4, No. 3, March, 1943, pp. 67-69.)

ITEM NO.	R.T.P. REF.		TITLE AND JOURNAL.
301	12840	U.S.A. ...	*Training of Aircraft Engine Mechanics.* (E. L. Warner, Automotive Industries, Vol. 89, No. 2, 15/7/43, pp. 17-18, 98-100.)
			Turbines, Pumps, etc.
302	12753	U.S.A. ...	*Gas Turbines for Planes.* (American Aviation, Vol. 7, No. 2, 15/6/43, p. 69.)
303	12801	U.S.A. ...	*The Elimination of Carry-Over Under Steel Mill Operating Conditions in Boilers.* (H. M. Rivers and W. P. Hill, Trans. A.S.M.E., Vol. 65, No. 3, April, 1943, pp. 149-158.)
304	12803	U.S.A. ...	*Power Pulsation Between Synchronous Generators.* (T. Warming, Trans. A.S.M.E., Vol. 65, No. 3, April, 1943, pp. 165-176.)
305	13076	U.S.A. ...	*New Method of Treating Carbon Brushes for Aircraft Generators to Overcome the Effects of Altitude.* (Automotive Industries, Vol. 88, No. 12, 15/6/43, p. 40.)
306	13124	G.B.	*High Pressure Pump Production.* (Machinery, Vol. 63, No. 1,608, 5/8/43, pp. 150-152.)
			Accessories (Cylinders, Governors, etc.).
307	12558	U.S.A. ...	*Substitution for Aluminium in Brake Cylinder Pistons.* (J. F. Bachman, S.A.E. Journal, Vol. 51, No. 1, July, 1943, p. 67.)
308	12561	U.S.A. ...	*Aircraft Accessory System.* (T. B. Holliday, S.A.E. Journal, Vol. 51, No. 1, July, 1943, pp. 234-240, 247.)
309	12679	G.B.	*Aircraft Engine Bearings.* (T. Barish, Engineers' Digest, Vol. 4, No. 3, March, 1943, pp. 75-76.)
310	12680	Germany ...	*The Load Carrying Capacity of Plastic Bearings.* (From Maschinenbau (Der Betrieb), Vol. 21, No. 6, June, 1942, pp. 257-261.) (H. Frank, Engineers' Digest, Vol. 4, No. 3, March, 1943, pp. 77-80.)
311	12683	Germany ...	*Light Alloy Pistons for Internal Combustion Engines.* (Brennstoff und Wärmewirtschaft, Vol. 24, No. 6, June, 1942, pp. 97-101.) (Engineers' Digest, Vol. 4, No. 3, March, 1943, pp. 82-85.)
312	12690	Germany ...	*Centrifugal Contact Governor for Universal Motors.* (From Elektrotechnische Anzeiger, Vol. 59, No. 10, May 13, 1942, pp. 218-220.) (M. Voege, Engineers' Digest, Vol. 4, No. 3, March, 1943, pp. 91-92.)
313	12773	U.S.A. ...	*Low Nickel Steel for Roller Bearings.* (Metal Progress, Vol. 43, No. 6, June, 1943, pp. 909-910.)
314	12909	G.B.	*Plastics Tested for Brake Cylinder Pistons.* (British Plastics, Vol. 15, No. 171, Aug., 1943, p. 144.)
315	13056	U.S.A. ...	*Silver-Lead Bearings (New U.S.A. Patent).* (Aircraft Production, Vol. 5, No. 54, April, 1943, p. 194.)
			Cold Starting.
316	12548	U.S.A. ...	*Engine Heater for Quick Starting on Alaskan Airfields (Photograph).* (American Aviation, Vol. 6, No. 22, 15/4/43, p. 18.)

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317	12634	U.S.A. ...	*Progress Report on Cold Starting. Data of the Automotive Diesel Fuel Division of the Co-operative Fuel Research Committee.* (F. C. Burk, S.M.E. Preprints, War Engineering Prod. Meeting, Jan. 11-15, 1943.)
318	12635	U.S.A. ...	*Cold Starting Tests on Diesel Engines.* (H. R. Porter, S.M.E. Preprints, War Eng. Prod. Meeting, Jan. 11-15, 1943.)
319	12636	U.S.A. ...	*Cranking Power and Torque Requirements at Sub-Zero Temperatures.* (H. L. Knudsen, S.M.E. Preprints, War Eng. Prod. Meeting, Jan. 11-15, 1943.)
320	12637	U.S.A. ...	*Effect of Injection Pump on Cold Starting.* (M. R. Roenach, S.M.E. Preprints, War Eng. Prod. Meeting, Jan. 11-15, 1943.)
321	12709	G.B.	*Diesel Engines—Starting at Sub-Zero Temperatures.* (Automobile Engineer, Vol. 33, No. 439, Aug., 1943, pp. 315-316.)

FUELS AND LUBRICANTS.

Fuels (Aviation, Marine, Special).

322	12482	G.B.	*Pulverised Fuel for Metallurgical Furnaces.* (C. S. Darling, Mechanical World, Vol. 114, No. 2,950, 16/7/43, pp. 60-63.)
323	12486	G.B.	*Fuel for Marine Propulsion (Use of Coal).* (Mechanical World, Vol. 114, No. 2,950, 16/7/43, p. 75.)
324	12684	Germany ...	*Liquefied Gas Fuel for Diesel Engines.* (From A.T.Z., Vol. 45, No. 8, April 25, 1942, pp. 201-207.) (F. Dreyhaupt, Engineers' Digest, Vol. 4, No. 3, March, 1943, pp. 85-88.)
325	12707	G.B.	*Altérnative Fuels, Pt. I, Acetylene.* (Automobile Engineer, Vol. 33, No. 439, Aug., 1943, pp. 299-307.)
326	12736	G.B.	*English Wood Charcoals.* (L. G. G. Warne, J. of the Soc. of Chemical Industry, Vol. 62, No. 6, June, 1943, pp. 88-90.)
327	12852	U.S.A. ...	*Electro-Magnetic System of Fuel Injection.* (Automotive Industries, Vol. 89, No. 2, 15/7/43, p. 69.)
328	13035	U.S.A. ...	*Improved Aviation Gasoline.* (Aero Digest, Vol. 42, No. 4, April, 1943, p. 312.)
329	13087	G.B.	*The Petroleum Refining Process (Demonstration Model).* (Mechanical World, Vol. 114, No. 2,951, 23/7/43, pp. 94-95.)
330	13137	G.B.	*The World's Ultimate Petroleum Reserves.* (J. G. Bennett, Petroleum Times, Vol. 47, No. 1,201, 7/8/43, p. 400.)
331	13138	Sweden ...	*Sweden's Liquid Fuel Problems.* (E. A. Bell, Petroleum Times, Vol. 47, No. 1,201, 7/8/43, pp. 404-405.)
332	13139	Rumania ...	*New Products from Roumanian Methane.* (E. A. Bell, Petroleum Times, Vol. 47, No. 1,201, 7/8/43, pp. 406-410.)

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333	13147	G.B. ...	... *Fractional Distillation on Binary Mixtures, Number of Theoretical Plates and Transfer Units.* (A. J. V. Underwood, Institute of Petroleum, Vol. 29, No. 234, June, 1943, pp. 147-156.)
334	13155	G.B. ...	... *Education and the Petroleum Industry.* (V. C. Illing, Petroleum Times, Vol. 47, No. 1,200, 24/7/43, pp. 374-377.)
			Oils and Lubrication.
335	12508	U.S.A.	... *Influence of Machine Design on Lubrication.* (W. G. G. Godron, Mech. Eng., Vol. 65, No. 5, May, 1943, pp. 347-349, 359.)
336	12578	U.S.A.	... *Diesel Motor Oils Compared by Laboratory and Field Tests.* (R. S. Wetmiller, S.A.E. Journal, Vol. 51, No. 1, July, 1943, p. 60.)
337	12654	U.S.A.	... *Re-Refining of Aircraft Engine Oils.* (G. K. Brower, S.A.E.J., Vol. 51, No. 4, April, 1943, pp. 130-138.)
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341	13136	U.S.S.R.	... *Some Figures on Russian Crude Oil Output.* (Petroleum Times, Vol. 47, No. 1,201, 7/8/43, p. 394.)
342	13154	G.B. ...	... *Coal and Oil—New Facts and Future Problems.* (W. A. Bristow, Petroleum Times, Vol. 47, No. 1,200, 24/7/43, pp. 368-371.)
			Oil Testing.
343	12638	U.S.A.	... *Piston Ring Scuffing as a Criterion of Oil Performance.* (G. H. Keller, S.M.E. Preprints, War Eng. Prod. Meeting, Jan. 11-15, 1943.)
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345	12579	U.S.A.	.. *24-Hr. Test Developed to Study Motor Oils.* (S.A.E. Journal, Vol. 51, No. 1, July, 1943, pp. 60-61.)

THEORY OF ELASTICITY.

Stresses in Beams, Springs, Plates, etc.

346	12367	Germany	... *Elastic Modulus by Dynamic Method of Plastic Materials.* (Fröhlich, Plastics, Vol. 7, No. 75, August, 1943, p. 334.)
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349	12582	U.S.A. ...	*Significance of the Secant and Tangent Moduli of Elasticity in Structural Design.* (D. S. Wolford, Aero Sciences, Vol. 10, No. 6, June, 1943, pp. 169-179.)
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351	12657	G.B.	*Compression Flanges of Larger Plate Girders.* (J. E. Kindler, Civil Engineering, Vol. 38, No. 441, March, 1943, pp. 60-64.)
352	12766	U.S.A. ...	*Ship Plate, Cracked Weldings and Internal Stresses.* (Metal Progress, Vol. 43, No. 6, June, 1943, pp. 919-926.)
353	12772	U.S.A. ...	*Triaxial Stresses in Plastic Deformation.* (Metal Progress, Vol. 43, No. 6, June, 1943, p. 946.)
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356	12888	Germany ...	*Surface Compression a Means of Increasing the Fatigue Strength of Springs Used in Motor Vehicles.* (From A.T.Z., Vol. 45, No. 12, June 25, 1942, pp. 321-325.) (O. Foeppl, Engineers' Digest, Vol. 4, No. 4, April, 1943, pp. 111-112.)
357	12896	Germany ...	*Calculation for Rubber Springs.* (From V.D.I. Zeitschrift, Vol. 86, Nos. 35-36, Sept., 1942, pp. 535-538.) (C. W. Kosten, Engineers' Digest, Vol. 4, No. 4, April, 1943, pp. 123-126.)
358	12897	Germany ...	*Extensometer Measurements on the Back Axle of a Lorry.* (From A.T.Z., Vol. 45, No. 17, Sept. 10, 1942, pp. 461-470.) (E. Lehr and R. Schulz, Engineers' Digest, Vol. 4, No. 4, April, 1943, pp. 126-128.)
359	12938	G.B.	*Curved Beams and Press Frames.* (Machinery, Vol. 62, No. 1,600, 10/6/43, pp. 630-631.)
360	12989	U.S.A. ...	*Improving the Fatigue Strength of Engine Parts.* (J. O. Almen, Aero Digest, Vol. 42, No. 6, June, 1943, pp. 217-223, 329-330.)
361	13102	Germany ...	*The Influence of Deformation on the Internal Loads of Beams with a Straight Axis.* (Luftfahrtforschung, Vol. 19, No. 9, Oct., 1942, pp. 320-325.) (F. Reinitzhuber, Engineers' Digest, Vol. 4, No. 5, May, 1943, pp. 133-136.)
362	13103	Germany ...	*Extensometer Measurements on the Back Axle of a Lorry (Contd.).* (A.T.Z., Vol. 45, No. 17, Sept. 10, 1942, pp. 461-470.) (H. E. Lehr and R. Schulz, Engineers' Digest, Vol. 4, No. 5, May, 1943, pp. 136-141.)

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MATERIALS (PROPERTIES, FABRICATION, INSPECTION).

A. Properties.

Al. and Mg. Alloys.

363	12420	G.B. ...	... *The Use of Corrosion Inhibitors for Aluminium Chemical Equipment.* (R. B. Mears and G. C. Eldridge, Metal Industry, Vol. 63, No. 7, 13/8/43, pp. 101-104.)
364	12483	G.B. ...	... *Impurities in Aluminium Casting Alloys—Effects of Minor Alloying Elements.* (Mechanical World, Vol. 114, No. 2,950, 16/7/43, pp. 64-65.)
365	12511	U.S.A.	... *Working Aluminium.* (Mech. Eng., Vol. 65, No. 5, May, 1943, p. 364.)
366	12540	G.B. ...	... *Magnesium Plating Bath.* (Aircraft Prod., Vol. 5, No. 57, July, 1943, p. 346.)
367	12581	U.S.A.	... *Elevated Temperature Ageing of 24S Aluminium Alloy.* (P. P. Mozley, Aero Sciences, Vol. 10, No. 6, June, 1943, pp. 180-184.)
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369	12670	G.B. ...	... *Fabrication of Aluminium Alloys.* (E. G. West, Sheet Metal Industries, Vol. 17, No. 195, July, 1943, p. 1228.)
370	12732	G.B. ...	... *The Constitution of Magnesium-Manganese Zinc-Aluminium Alloys in the Range 0-5 per cent. Magnesium, 0-2 per cent. Manganese, 0-8 per cent. Zinc. I, The Liquidus.* (E. Butchers and others, J. Inst. Metals, Vol. 69, No. 5, May, 1943, pp. 209-228.)
371	12734	G.B. ...	... *Discussion on Papers entitled, "A Note on the Damping Characteristics of Some Magnesium and Aluminium Alloys."* (J. Inst. Metals, Vol. 69, No. 5, May, 1943, pp. 233-239.)
372	12834	G.B. ...	... *Alloys of Magnesium, Pt. 14, The Constitution of the Magnesium-Rich Alloys of Magnesium and Manganese.* (J. D. Grogan and J. L. Houghton, J. of the Inst. of Metals, Vol. 69, No. 6, June, 1943, pp. 241-248.)
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374	12946	G.B. ...	... *Forgeability of Light Alloys.* (Light Metals, Vol. 6, No. 63, April, 1943, pp. 189-192.)
375	12952	G.B. ...	... *Present Advantages and Limitations of Al. and Mg. Alloys in Aircraft Construction and Possible Use of Be.-Al. Alloys and Non-Metals.* (Light Metals, Vol. 6, No. 62, March, 1943, pp. 122-123.)
376	12956	G.B. ...	... *Current Light Alloy Specifications (April 1, 1943).* (Light Metals, Vol. 6, No. 64, May, 1943, pp. 243-249.)
377	12962	Germany	... *Aluminium Containing Zinc-Base Bearings.* (Schmid and Weber, Light Metals, Vol. 6, No. 60, Jan., 1943, pp. 25-28.)
378	12963	G.B. ...	... *Magnesium Protected by Steam.* (Light Metals, Vol. 6, No. 60, Jan., 1943, p. 29.)

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379	12964	G.B. ...	... *Extinguishing Magnesium Fires.* (Light Metals, Vol. 6, No. 60, Jan., 1943, p. 30.)
380	12965	Germany	... *Alumina from Aluminium Silicates.* (Light Metals, Vol. 6, No. 60, Jan., 1943, p. 30.)
381	13132	G.B. ...	... *Rubber Forming of Magnesium Alloy.* (Machinery, Vol. 62, No. 1,602, 24/6/43, p. 688.)
382	13135	G.B. ...	... *The Constitution of Alloys of Aluminium with Manganese, Silicon and Iron. I, The Binary System—Aluminium and Manganese; II, The Fernary Systems, Aluminium-Manganese-Silicon and Aluminium-Manganese-Iron.* (Journal of Inst. of Metals, Vol. 69, No. 7, July, 1943, pp. 275-316.)
			Iron and Steel.
383	12538	G.B. ...	... *British and American Specifications for Iron and Steel (B.S. 1,111).* (Aircraft Prod., Vol. 5, No. 57, July, 1943, p. 343.)
384	12761	U.S.A.	... *Supposed Graphite in Carburized N.E. and S.A.E. Steels. Investigation of the Grain Boundary Condition.* (J. Welchner and R. W. Roush, Metal Progress, Vol. 43, No. 6, June, 1943, pp. 889-896.)
385	12769	U.S.A.	... *Effects of Tin in Carbon Steel.* (J. W. Halley, Metal Progress, Vol. 43, No. 6, June, 1943, p. 936.)
386	13086	G.B. ...	... *The Production of Malleable Iron Castings.* (J. Roxburgh, Mechanical World, Vol. 114, No. 2,951, 23/7/43, pp. 90-93.)
387	13104	Germany	... *A Contribution to the Chemistry of Steel Works Analysis.* (Stahl und Eisen, Vol. 62, No. 44, Oct., 1942, pp. 923-926.) (A. Stadeler, Engineers Digest, Vol. 4, No. 5, May, 1943, pp. 141-142.)
388	13105	Germany	... *The Influence of Molybdenum and Vanadium Additions on Low Tungsten High Speed Steels Containing 4 per cent. Chromium.* (Stahl und Eisen, Vol. 62, No. 44, Oct., 1942, pp. 922-923.) (H. Kessner, Engineers' Digest, Vol. 4, No. 5, May, 1943, p. 143.)
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391	13149	G.B. ...	... *Promotion of the Corrosion of Iron in Alkaline Solutions by Zinc and Aluminium.* (G. Nilssom, Nature, Vol. 152, No. 3,850, 14/8/43, pp. 189-190.)

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			Non-Ferrous Alloys.
392	12422	G.B. ...	... *Antimony Bronze for Use in Gears.* (H. J. Roast, Metal Industry, Vol. 63, No. 7, 13/8/43, pp. 105-106.)
393	12423	G.B. ...	... *Copper-Antimony-Nickel Gear Alloy.* (Metal Industry, Vol. 63, No. 7, 13/8/43, pp. 106-108.)
394	12425	G.B. ...	... *Semi-Conducting Properties of Stannous Sulphide.* (M. C. Clark and J. S. Anderson, Nature, Vol. 152, No. 3,846, 17/7/43, pp. 75-76.)
395	12640	G.B. ...	... *The Problem of Copper and Galvanised Iron in the Same Water System (Contd.).* (L. Kenworthy, Engineering, Vol. 156, No. 4,048, 13/8/43, p. 125.)
396	12731	G.B. ...	... *Directional Characteristics of Single Texture Structure Copper Strip.* (M. Cook and T. L. Richards, J. Inst. Metals, Vol. 69, No. 5, May, 1943, pp. 201-207.)
397	12733	G.B. ...	... *Discussion on Papers Entitled, "The Properties of Commercial Coppers Containing Selenium, Tellurium and Bismuth," and "The Effect of Selenium, Tellurium and Bismuth on De-Oxidized Copper for Tube Manufacture."* (J. Inst. Metals, Vol. 69, No. 5, May, 1943, pp. 229-234.)
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399	12763	U.S.A.	... *Beryllium.* (Metal Progress, Vol. 43, No. 6, June, 1943, pp. 904-907, 942.)
400	12767	U.S.A.	... *Importance of Impurity-Free Zinc Base Die Castings.* (Metal Progress, Vol. 43, No. 6, June, 1943, p. 930.)
401	12770	U.S.A.	... *Boron as an Alloying Element.* (Metal Progress, Vol. 43, No. 6, June, 1943, p. 944.)
402	12775	U.S.A.	... *New Lead Alloy ("Tubeloy").* (Metal Progress, Vol. 43, No. 6, June, 1943, p. 911.)
403	12835	G.B. ...	... *The Expansion of a Bismuth-Lead-Tin-Cadmium Alloy on Cooling After Solidification.* (L. E. Benson and M. B. Coyle, J. of the Inst. of Metals, Vol. 69, No. 6, June, 1943, pp. 249-257.)
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405	12854	U.S.A.	... *Conservation of Tungsten in Automotive Electrical Parts.* (Automotive Industries, Vol. 89, No. 2, 15/7/43, p. 74.)
406	12863	G.B. ...	... *Copper and the War.* (Times, Trade and Engineering, Vol. 53, No. 952, June, 1943, p. 9.)
407	12934	G.B. ...	... *Beryllium for X-Ray Metal Tests.* (Machinery, Vol. 62, No. 1,601, 17/6/43, p. 661.)
408	13040	G.B. ...	... *Solubility of Metals in Mercury.* (Nature, Vol. 152, No. 3,847, 24/7/43, p. 108.)
409	13088	G.B. ...	... *Treatment of Fusion Welds in Non-Ferrous Metals.* (Mechanical World, Vol. 114, No. 2,951, 23/7/43 p. 101.)

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410	13090	G.B. ...	...	*Lead in War.* (Times, Trade and Engg., Vol. 53, No. 953, July, 1943, p. 9.)
411	13097	U.S.A.	...	*Thermal Expansivity and Density of Iridium.* (P. Hidnert and M. G. Blair, J. of Research, National Bureau of Standards, Vol. 30, No. 6, June, 1943, pp. 427-433.)
412	13161	G.B. ...	...	*Report on Tin-Free Gear Bronze.* (Machinery, Vol. 63, No. 1,605, 15/7/43, p. 73.)

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413	12361	G.B. ...	...	*Anti-Personnel Hand Grenade, Made of Shock-Resisting Phenolic Resin (No. 69).* (Plastics, Vol. 7, No. 75, August, 1943, pp. 324, 327.)
414	12365	Germany	...	*Thermal Insulation with Iporka.* (From Wärme und Kaltetechn., 1941, Vol. 43, p. 153.) (Seiffert, Plastics, Vol. 7, No. 75, August, 1943, p. 334.)
415	12369	France	...	*Resistance of Polyvinylacetal Resins to Strong Alkali Solutions.* (Gibello, Plastics, Vol. 7, No. 75, August, 1943, p. 335.)
416	12371	Germany	...	*Complex Synthetic Resins.* (Plastics, Vol. 7, No. 75, August, 1943, p. 336.)
417	12372	Japan	...	*Constitution of Highly Polymerized Condensates, Especially of A.X.F.* (Plastics, Vol. 7, No. 75, August, 1943, p. 336.)
418	12373	Germany	...	*Quinone Inhibition of Styrene Polymerization.* (Plastics, Vol. 7, No. 75, August, 1943, p. 336.)
419	12375	France	...	*Pigment Plasticizer Combinations for Cellulose Lacquers.* (Plastics, Vol. 7, No. 75, August, 1943, p. 336.)
420	12376	G.B. ...	...	*Metallizing Plastics (Contd.).* (E. E. Halls, Plastics, Vol. 7, No. 75, August, 1943, pp. 337-348.)
421	12377	U.S.A.	...	*Sheet Plastics Seamed by Radio Current.* (Plastics, Vol. 7, No. 75, August, 1943, p. 349.)
422	12378	G.B. ...	...	*The Limitations of Plastics.* (D. W. Brown, Plastics, Vol. 7, No. 75, August, 1943, pp. 351-356.)
423	12379	G.B. ...	...	*Plastics in Building.* (Plastics, Vol. 7, No. 75, August, 1943, p. 356.)
424	12380	Germany	...	*New Tensile Test Piece for Plastics.* (From Schweizer Archiv., 1943, Vol. 8, No. 24.) (Frischmuth, Plastics, Vol. 7, No. 75, August, 1943, pp. 359-364.)
425	12381	G.B. ...	...	*Markers and Binders for Cables.* (Plastics, Vol. 7, No. 75, August, 1943, p. 367.)
426	12382	G.B. ...	...	*Resinoids and Other Plastics as Film Formers. XIX, Electrolytic Aspects of High Polymeric Systems.* (B. J. Brajnikoff, Plastics, Vol. 7, No. 75, August, 1943, pp. 368-372.)
427	12475	U.S.A.	...	*Progress in New Synthetic Textile Fibres.* (H. R. Mauersberger, A.S.T.M., No. 122, May, 1943, pp. 25-28.)

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428	12693	U.S.A. ...	*Plastic Tubing.* (Modern Plastics, Vol. 20, No. 7, March, 1943, p. 74.)
429	12696	U.S.A. ...	*Saran Used for Electroplating Masks.* (R. R. Bradshaw, Modern Plastics, Vol. 20, No. 7, March, 1943, pp. 78-79, 136.)
430	12697	U.S.A. ...	*Vinyl Compound Combats Corrosion* (" *Tygon* "). (Modern Plastics, Vol. 20, No. 7, March, 1943, pp. 85-868, 146.)
431	12701	U.S.A. ...	*Mechanic Tests of Cellulose Acetate.* (W. N. Findley, Modern Plastics, Vol. 20, No. 7, March, 1943, pp. 99-105, 138.)
432	12706	U.S.A. ...	*The Extension and Rupture of Cellulose Acetate and Celluloid.* (R. N. Hayward, Modern Plastics, Vol. 20, No. 7, March, 1943, p. 110.)
433	12823	U.S.A. ...	*Plastic Pipe and Power (Saran Pipe Utilized in Rectifying and Heat Exchange Installations in the Electrolytic Mass Production of Magnesium).* (Industrial Eng. Chemistry, Vol. 21, No. 13, 10/7/43, pp. 1052-1053.)
434	12825	U.S.A. ...	*Use of Lumarith on Windshields.* (Industrial Eng. Chemistry, Vol. 21, No. 13, 10/7/43, p. 1074.)
435	12826	U.S.A. ...	*Synthetic Mica (Polectron).* (Industrial Eng. Chemistry, Vol. 21, No. 13, 10/7/43, p. 1075.)
436	12829	U.S.A. ...	*Camouflage Paint.* (Industrial Eng. Chemistry, Vol. 21, No. 13, 10/7/43, p. 1076.)
437	12864	G.B.	*Synthetic Resins in the Paint Industry, II.* (Times Trade and Engineering, Vol. 53, No. 952, June, 1943, p. 10.)
438	12872	Canada ...	*Plastics—Developments in Canada.* (Times Trade and Engineering, Vol. 53, No. 952, June, 1943, p. 44.)
439	12907	G.B.	*Synthetic Resins in Papermaking.* (C. S. Maxwell, British Plastics, Vol. 15, No. 171, Aug., 1943, pp. 141-142.)
440	12908	G.B.	*Polyvinyl Resins as War Replacements.* (British Plastics, Vol. 15, No. 171, Aug., 1943, p. 142.)
441	12910	G.B.	*Pioneers in Plastics.* (British Plastics, Vol. 15, No. 171, Aug., 1943, pp. 146-148.)
442	12911	G.B.	*Heat-Sensitive Compounds for Temperature Measurement* (" *Tempilstiks* " *and* " *Tempilag* "). (British Plastics, Vol. 15, No. 171, Aug., 1943, p. 153.)
443	12913	G.B.	*Laminated Bearings in the Paper Industry* (" *Ryertex* " *Bearings*). (British Plastics, Vol. 15, No. 171, Aug., 1943, pp. 156-162.)
444	12914	G.B.	*Latest Cellulose Applications.* (British Plastics, Vol. 15, No. 171, Aug., 1943, pp. 164-165.)
445	12915	G.B.	*Methyl Cellulose. New Industrial Applications.* (British Plastics, Vol. 15, No. 171, Aug., 1943, pp. 168-170.)
446	12916	G.B.	*X-Ray Equipment Uses Plastics (Portable X-Ray Trailer for Inspection of Aircraft Parts).* (British Plastics, Vol. 15, No. 171, Aug., 1943, p. 171.)

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447	12917	G.B. ...	... *Cold Moulded Plastics.* (J. Delmonte, British Plastics, Vol. 15, No. 171, Aug., 1943, pp. 174-177.)
448	12918	G.B. ...	... *Vinyl Chloride Acetate Copolymers.* (J. D. Benedito, British Plastics, Vol. 15, No. 171, Aug., 1943, pp. 178-181.)
449	12919	G.B. ...	... *New Type Plastic Material "Silicones."* (British Plastics, Vol. 15, No. 171, Aug., 1943, p. 181.)
450	13151	G.B. ...	... *Substitute Materials.* (C. H. Desch, Nature, Vol. 152, No. 3,850, 14/8/43, p. 184.)
			Rubber (Nat. and Syn.).
451	12366	Germany	... *Testing of Polyvinyl Chloride.* (Berger, Plastics, Vol. 7, No. 75, August, 1943, p. 334.)
452	12374	Germany	... *New Methods for Working Polyvinyl Chloride.* (From Kunststoffe, 1942, Vol. 32, p. 137.) (Wick and Iloff, Plastics, Vol. 7, No. 75, August, 1943, p. 336.)
453	12704	U.S.A.	... *Synthetic Rubber.* (H. I. Cramer, Modern Plastics, Vol. 20, No. 7, March, 1943, pp. 108, 142.)
454	12713	G.B. ...	... *Rubber—Natural and Synthetic Supplies.* (C. Ridley, Automobile Engineer, Vol. 33, No. 439, Aug., 1943, pp. 334-337.)
455	12912	G.B. ...	... *P.V.C. Cable as Substitute for Rubber Insulated Cable.* (British Plastics, Vol. 15, No. 171, Aug., 1943, p. 153.)
456	13007	U.S.A.	... *Covered Sponge Rubber Gasket.* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 381-383.)
457	13091	Canada	... *Synthetic Rubber Research in Canada.* (Times Trade and Engg., Vol. 53, No. 953, July, 1943, p. 15.)
458	13122	G.B. ...	... *M.A.P. Two-Unit 5,340-Ton Rubber Die Press.* (Machinery, Vol. 63, No. 1,608, 5/8/43, pp. 141-146.)
			Wood and Plywood.
459	12384	G.B. ...	... *Flexible Pressure in Veneer and Plywood Work.* (T. D. Perry, Engineer, Vol. 176, No. 4,570, 13/8/43, pp. 132-133.)
460	12417	G.B. ...	... *High Frequency Heating in Plywood Manufacture.* (From Bulletin No. 6, June, 1943, of Aero Research, Ltd.) (Engineering, Vol. 156, No. 4,047, 6/8/43, pp. 116-117.)
461	12510	U.S.A.	... *Aircraft Plywood.* (Mech. Eng., Vol. 65, No. 5, May, 1943, pp. 362-364.)
462	12804	U.S.A.	... *An Analysis of the Factors Responsible for Raised Grain on the Wood of Oak following Sanding and Staining.* (G. G. Marra, Trans. A.S.M.E., Vol. 65, No. 3, April, 1943, pp. 177-185.)
463	12806	U.S.A.	... *High Density Plywood.* (M. Finlayson, Trans. A.S.M.E., Vol. 65, No. 3, April, pp. 193-199.)
464	12807	U.S.A.	... *Heating Wood with Radio Frequency Power.* (J. P. Taylor, Trans. A.S.M.E., Vol. 65, No. 3, April, 1943, pp. 201-212.)

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465	12882	G.B. ...	... *Ash Bark Beetle Damage (Affects Woods).* (R. C. Fisher, Aircraft Engineering, Vol. 15, No. 174, Aug., 1943, p. 244.)
466	12924	G.B. ...	... *Flexible Pressure in Veneer and Plywood Work.* (T. D. Perry, Engineer, Vol. 176, No. 4,571, 20/8/43, pp. 155-156.)

Glass, Ceramics, Diamonds.

467	12411	G.B. ...	... *A Note on the Puncture Strength of Porcelain, etc.* (E. Rosenthal, Electronic Engineering, Vol. 15, No. 186, August, 1943, p. 130.)
468	12474	U.S.A.	... *Behaviour of Glazing Material Subjected to Explosion.* (F. W. Adams, A.S.T.M., No. 122, May, 1943, pp. 15-22.)
469	12487	U.S.A.	... *Glass for Workshop Gauges.* (Mechanical World, Vol. 114, No. 2,950, 16/7/43, pp. 76-78.)
470	12708	G.B. ...	... *Diamond Tools.* (Automobile Engineer, Vol. 33, No. 439, Aug., 1943, pp. 309-315.)
471	12828	U.S.A.	... *Plexiglas Cleaner.* (Industrial Eng. Chemistry, Vol. 21, No. 13, 10/7/43, p. 1076.)
472	13065	Canada	... *Canadian Synthetic Sapphires.* (L. B. Jackes, Canadian Aviation, Vol. 16, No. 6, June, 1943, pp. 114-115.)
473	13157	G.B. ...	... *Glass Gauges.* (Machinery, Vol. 63, No. 1,605, 15/7/43, p. 62.)

Concrete and Cement.

474	12383	G.B. ...	... *Soil Cement Stabilisation.* (Engineer, Vol. 176, No. 4,570, 13/8/43, pp. 128-129.)
475	12413	G.B. ...	... *Tilting-Drum Concrete Mixer.* (Engineering, Vol. 156, No. 4,047, 6/8/43, p. 106.)
476	12477	U.S.A.	... *Discussion on Durability of Concrete.* (A.S.T.M., No. 122, May, 1943, pp. 40-42.)
477	12891	Germany	... *Cement as a Material for the Construction of Casting Moulds.* (From Die Giesserei, Vol. 29, No. 14, July, 1942, pp. 249-250.) (H. Goedal, Engineers' Digest, Vol. 4, No. 4, April, 1943, pp. 116-117.)
478	13118	U.S.A.	... *New Cement Replaces Riveting and Welding ("Cycleweld" Process).* (American Aviation, Vol. 7, No. 4, 15/7/43, p. 77.)

General Properties of Metals, etc.

479	12418	G.B. ...	... *Mechanical Properties of Metals.* (A. C. Vivian, Engineering, Vol. 156, No. 4,047, 6/8/43, pp. 118-120.)
480	12421	G.B. ...	... *Explosives in the Working of Metals.* (A. Behr, Metal Industry, Vol. 63, No. 7, 13/8/43, p. 104.)
481	12735	G.B. ...	... *Metallurgical Abstracts (Vol. 10, Part 5, May, 1943, pp. 133-166).* (J. Inst. Metals, No. 5.)
482	12837	G.B. ...	... *Correspondence on Paper "New Methods for the Examination of Corroded Metal."* (J. of the Inst. of Metals, Vol. 69, No. 6, June, 1943, pp. 269-271.)

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483	12820	U.S.A. ...	*Post-War Products Planning—A Review of Raw Materials Sources.* (C. E. Williams, Industrial Eng. Chemistry (News Edition), Vol. 21, No. 13, 10/7/43, pp. 1035-1040.)
484	12821	U.S.A. ...	*The American Patent System.* (Industrial Eng. Chemistry (News Edition), Vol. 21, No. 13, 10/7/43, pp. 1041-1045.)

B. Fabrication.

Welding.

485	12360	G.B.	*The Welding of Plastics.* (Plastics, Vol. 7, No. 75, August, 1943, p. 326.)
486	12424	G.B.	*Aluminium Spot Welding Faults.* (Metal Industry, Vol. 63, No. 7, 13/8/43, p. 108.)
487	12514	U.S.A. ...	*Report on the All-Welded Tanker SS. Schnectady.* (Mech. Eng., Vol. 65, No. 5, May, 1943, pp. 365-366.)
488	12517	U.S.A. ...	*Low Temperature Salvage Welding of Defective Castings (Cestolin Eutectic Process).* (Mech. Eng., Vol. 65, No. 5, May, 1943, pp. 26-27.)
489	12518	U.S.A. ...	*New Electronic Control for Resistance Welding of Aluminium (General Electric).* (Mech. Eng., Vol. 65, No. 5, May, 1943, p. 23.)
490	12536	G.B.	*Condenser-Type Spot Welding of Light Alloys.* (T. M. Roberts, Aircraft Prod., Vol. 5, No. 57, July, 1943, pp. 338-343.)
491	12672	G.B.	*Welding by Aromic Hydrogen.* (Sheet Metal Industries, Vol. 17, No. 195, July, 1943, pp. 1235-1238, 1241.)
492	12673	G.B.	*The Welding of Stainless Steels.* (Sheet Metal Industries, Vol. 17, No. 198, July, 1943, p. 1241.)
493	12674	G.B.	*Weld Finishing.* (E. G. West, Sheet Metal Industries, Vol. 17, No. 195, July, 1943, pp. 1242-1250.)
494	12677	Switzerland ...	*Spot Welding of Aluminium and Aluminium Alloy Sheet Metal with a 60 K.V.A. Machine.* (R. Irmann, from Schweizerische Bauzeitung, Vol. 120, No. 16, Oct. 17, 1942, pp. 179-183.) (Engineers' Digest, Vol. 4, No. 3, March, 1943, pp. 70-73.)
495	12886	U.S.A. ...	*Resistance Welds with Electronic Control.* (T. R. Lawson, Engineers' Digest, Vol. 4, No. 4, April, 1943, pp. 104-107.)
496	12894	Germany ...	*New Devices for Holding the Material in Electric Butt and Flash Welders.* (From Werkstatt und Betrieb., Vol. 75, No. 6, June, 1942, pp. 129-130.) (P. Florian, Engineers' Digest, Vol. 4, No. 4, April, 1943, pp. 119-121.)
497	12945	Switzerland ...	*Gas Welding, Arc Welding and Atomic Hydrogen Welding of Aluminium.* (Herrmann and Zurbrügg, Light Metals, Vol. 6, No. 63, April, 1943, pp. 180-188.)
498	12997	U.S.A. ...	*Arc Welded Tubular Jigs.* (R. H. Holmes, Aero Digest, Vol. 42, No. 6, June, 1943, pp. 301-309.)

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499	13148	G.B. ...	... *Recent Developments in Welding.* (C. W. Brett, Institute of Petroleum, Vol. 29, No. 234, June, 1943, pp. 157-162.)
			Machining, Grinding.
500	12419	G.B. ...	... *Machining Copper and its Alloys—I.* (Metal Industry, Vol. 63, No. 7, 13/8/43, pp. 98-100.)
501	12900	G.B. ...	... *Machining Copper and its Alloys—II.* (Metal Industry, Vol. 63, No. 8, 20/8/43, pp. 118-120.)
502	12939	G.B. ...	... *Profile Grinding and Profile Grinding Machines.* (Machinery, Vol. 62, No. 1,600, 10/6/43, pp. 635-636.)
503	13134	G.B. ...	... *Free Machining Nickel Alloy ("Invar").* (Machinery, Vol. 62, No. 1,602, 24/6/43, p. 696.)
504	13162	G.B. ...	... *Securing Fine Surface Quality by Grinding.* (H. J. Wills, Machinery, Vol. 63, No. 1,605, 15/7/43, pp. 75-76.)
			Surface Protection.
505	12414	G.B. ...	... *Recent Advances in Protective Coatings.* (Engineering, Vol. 156, No. 4,047, 6/8/43, p. 109.)
506	12515	U.S.A.	... *Surface Finish of Journals, as Affecting Friction Wearing-in and Seizure of Bearings (Discussion on Paper).* (Mech. Eng., Vol. 65, No. 5, May, 1943, pp. 367-371.)
507	12729	G.B. ...	... *Heat Resisting and Stoving Finishes.* (R. L. Frost, Chemistry and Industry, Vol. 62, No. 33, 14/8/43, pp. 306-310.)
508	12827	U.S.A.	... *Plating Extends Gauge Life.* (Industrial Eng. Chemistry, Vol. 21, No. 13, 10/7/43, p. 1075.)
509	12839	G.B. ...	... *Correspondence on Paper "The Surface Protection of Magnesium Alloys."* (J. of the Inst. of Metals, Vol. 69, No. 6, June, 1943, pp. 273-274.)
510	12902	G.B. ...	... *Chromium Plating of Dies and Tools.* (D. A. Cotton, Metal Industry, Vol. 63, No. 8, 20/8/43, pp. 122-124.)
511	12941	G.B. ...	... *Nature and Uses of Metallic Naphthenates as Protective Films and Sealing Compounds in Metallurgy.* (Light Metals, Vol. 6, No. 63, April, 1943, pp. 164-165.)
512	12943	G.B. ...	... *Oxidation Protection of Magnesium (Use of Steam and Free Oxygen).* (Light Metals, Vol. 6, No. 63, April, 1943, pp. 169-171.)
513	12951	G.B. ...	... *Practical Data on the Chromic Acid Anodizing Process.* (Light Metals, Vol. 6, No. 62, March, 1943, pp. 115-122.)
514	12957	U.S.S.R.	... *Electro-Deposition of Light Metals from Non-Aqueous Solutions (Contd.).* (M. A. Klochko, Light Metals, Vol. 6, No. 64, May, 1943, pp. 254-258.)
515	12958	G.B. ...	... *R.A.E. Chromate Treatment.* (Light Metals, Vol. 6, No. 64, May, 1943, p. 238.)
516	12960	G.B. ...	... *Painting Aluminium by Roller Coating.* (Light Metals, Vol. 6, No. 60, Jan., 1943, pp. 18-19.)

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			Heat Treatment.
517	12386	G.B.	*High Frequency Heating of the Non-Metallic Materials.* (Engineer, Vol. 176, No. 4,570, 13/8/43, p. 134.)
518	12668	G.B.	*Application of Radiant Heat to Metal Finishing.* (J. H. Nelson and H. Silman, Sheet Metal Industries, Vol. 17, No. 195, July, 1943, pp. 1213-1225, 1228.)
519	12678	Germany ...	*The Technique of Melting and the Casting Properties of Aluminium and Aluminium Alloys.* (From Die Giesserei, Vol. 29, No. 17, Aug., 1942, pp. 285-291.) (H. Roehrig, Engineers' Digest, Vol. 4, No. 3, March, 1943, pp. 73-75.)
520	12768	U.S.A. ...	*Blast Furnace Refractions.* (R. E. Birch, Metal Progress, Vol. 43, No. 6, June, 1943, pp. 932-934.)
521	12836	G.B.	*The Effect of Quenching and Prolonged Tempering on a Base Antimony-Cadmium-Tin Alloys. II—Changes in Tensile Properties.* (W. T. Pell-Walpole, J. of the Inst. of Metals, Vol. 69, No. 6, June, 1943, pp. 259-268.)
522	12865	G.B.	*Heat Insulation—Methods and Materials.* (Times Trade and Engineering, Vol. 53, No. 952, June, 1943, p. 28.)
523	12874	G.B.	*Metals at High Temperatures.* (N. A. de Bruyne, Aircraft Engineering, Vol. 15, No. 174, Aug., 1943, pp. 223-226.)
524	12881	G.B.	*Infra-Red Industrial Lamps.* (Aircraft Engineering, Vol. 15, No. 174, Aug., 1943, pp. 242-243.)
525	12890	Germany ...	*The Use of the Cupola Furnace for Metallurgical Purposes in the Melting of Cast Iron.* (From Die Giesserei, Vol. 29, No. 14, July, 1942, pp. 237-243.) (H. Kopp, Engineers' Digest, Vol. 4, No. 4, April, 1943, pp. 115-117.)
526	12898	G.B.	*Metallurgical Factors in the Founding of Aluminium Alloys (Contd.).* (Metal Industry, Vol. 63, No. 8, 20/8/43, pp. 114-117.)
527	12932	G.B.	*The Infra-Red Process in Industry.* (Machinery, Vol. 62, No. 1,601, 17/6/43, pp. 660-661.)
528	12955	G.B.	*System of Control for Aluminium Foundries.* (F. A. Allen and others, Light Metals, Vol. 6, No. 64, May, 1943, pp. 222-236.)
			Moulding and Casting.
529	12368	Germany ...	*Dies for Deep Injection Mouldings.* (From Kunststoffe, 1942, Vol. 32, p. 311.) (Gastrow, Plastics, Vol. 7, No. 75, August, 1943, p. 335.)
530	12370	Germany ...	*Dimensions of Moulds for Thermo-Setting Resins.* (From Kunststoffe, 1942, Vol. 32, p. 217.) (Weprek, Plastics, Vol. 7, No. 75, August, 1943, pp. 335-336.)
531	12698	U.S.A. ...	*Heatronic Moulding—New Technique for Rapid Moulding of Thermo-Setting Plastics.* (V. E. Meharg, Modern Plastics, Vol. 20, No. 7, March, 1943, pp. 87-90.)

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532	12699	U.S.A. ...	*Paper Laminates for Moulding.* (H. J. Luth, Modern Plastics, Vol. 20, No. 7, March, 1943, pp. 91, 138-140.)
533	12885	Germany ...	*Threads in Plastic Mouldings.* (From Kunststoffe, Vol. 32, No. 6, June, 1942, pp. 171-180.) (A. Thum, Engineers' Digest, Vol. 4, No. 4, April, 1943, pp. 101-104.)
534	12901	G.B.	*Heading and Gating of Aluminium and Magnesium Castings.* (Metal Industry, Vol. 63, No. 8, 20/8/43, p. 120.)
535	12903	G.B.	*Infra-Red Drying of Sand Moulds.* (Metal Industry, Vol. 63, No. 8, 20/8/43, p. 113.)
536	12906	G.B.	*Injection Moulds—Pt. II.* (British Plastics, Vol. 15, No. 171, Aug., 1943, pp. 133-140.)
537	12966	G.B.	*Recovery of Defective Pressure Castings.* (Light Metals, Vol. 6, No. 60, Jan., 1943, p. 31.)
538	13028	U.S.A. ...	*Development of a Cast Resin Stretch Press Die.* (L. J. Jaworski, Aero Digest, Vol. 42, No. 4, April, 1943, pp. 230-235.)
539	13052	G.B.	*Rubber Economy by Introducing Felt Core in Rubber Moulding (Felt Moulding Process).* (Aircraft Production, Vol. 5, No. 54, April, 1943, p. 175.)
540	13082	G.B.	*Centrifugal Steel Casting.* (C. K. Donoho, Mechanical World, Vol. 114, No. 2,952, 30/7/43, pp. 117-119.)
541	13096	G.B.	*Heatronic Moulding of Plastics.* (V. E. Yarsley, Times Trade and Engg., Vol. 53, No. 953, July, 1943, p. 44.)
542	13133	G.B.	*The Location of Inserts in Die Casting Dies—II.* (H. K. Barton, Machinery, Vol. 62, No. 1,602, 24/6/43, pp. 694-696.)
543	13158	G.B.	*Centrifugal Casting.* (Machinery, Vol. 63, No. 1,605, 15/7/43, p. 64.)

Soldering and Brazing.

544	12899	G.B.	*Hints on Brazing.* (Metal Industry, Vol. 63, No. 8, 20/8/43, p. 117.)
545	12929	G.B.	*Tipping Molybdenum by Braze-Hardening.* (Machinery, Vol. 62, No. 1,599, 3/6/43, pp. 607-608.)
546	12959	G.B.	*Soldering Aluminium Alloys.* (Light Metals, Vol. 6, No. 60, Jan., 1943, pp. 5-18.)

Drawing and Rolling.

547	12484	U.S.A. ...	*Steel Cartridge Cases.* (Mechanical World, Vol. 114, No. 2,950, 16/7/43, p. 65.)
548	12643	G.B.	*Two-Stage Drawing of Cylindrical Cups.* (H. W. Swift, Engineering, Vol. 156, No. 4,048, 13/8/43, pp. 137-140.)
549	12659	Germany ...	*Cold and Hot Rolling of Metals.* (*R.T.P.3 Translation No. 1,735.*) (O. Emicke and K. H. Lucas, Sheet Metal Industries, Vol. 17, No. 195, July, 1943, pp. 1159-1162.)

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550	12661	G.B. ...	... *Two-Stage Drawing of Cylindrical Cups.* (H. W. Swift, Sheet Metal Industries, Vol. 17, No. 195, July, 1943, pp. 1179-1193.)
551	12671	G.B. ...	... *Drawing Steel Cartridge Cases.* (G. S. Gardner, Sheet Metal Industries, Vol. 17, No. 195, July, 1943, p. 1229.)
552	12764	U.S.A.	... *Steel Cartridge Cases from Extended Cups.* (R. B. Schenck, Metal Progress, Vol. 43, No. 6, June, 1943, pp. 912-916.)
553	12858	U.S.A.	... *New Developments in Cold Drawing of Steel.* (Automotive Industries, Vol. 89, No. 2, 15/7/43, p. 96.)
554	13121	G.B....	... *Deep Drawing Research. Two-Stage Drawing of Cylindrical Cups.* (H. W. Swift, I.A.E. Report, No. 1,943-10, June, 1943, pp. 196-279.)

Stamping, Pressing, Etching.

555	12880	G.B. ...	... *A New Method of Etching on Metal.* (Aircraft Engineering, Vol. 15, No. 174, Aug., 1943, p. 241.)
556	12895	Germany	... *Automatic Devices Aid Stamping and Pressing.* (E. Vergen, Engineers' Digest, Vol. 4, No. 4, April, 1943, pp. 121-123.)

Joining and Bonding.

557	12529	G.B. ...	... *Plastic Bonding of Metals (The Redux Process).* (Aircraft Prod., Vol. 5, No. 57, July, 1943, pp. 313-314.)
558	12660	G.B. ...	... *The Joining and Protection of Metals.* (D. G. P. Paterson, Sheet Metal Industries, Vol. 17, No. 195, July, 1943, pp. 1163-1168, 1176.)
559	12666	G.B. ...	... *The Redux Process for Bonding Metals.* (Sheet Metal Industries, Vol. 17, No. 195, July, 1943, pp. 1209-1232.)
560	12954	G.B. ...	... *Joining Light Alloys with Adhesives (Redux Process).* (Light Metals, Vol. 6, No. 64, May, 1943, pp. 219-221.)
561	13047	G.B. ...	... *Accelerating Wood Bonding (Use of Electric Heating with Synthetic Resin Adhesives).* (Aircraft Production, Vol. 5, No. 54, April, 1943, p. 171.)

Pickling and Desealing and Annealing.

562	12489	G.B. ...	... *Pickling and Annealing Brass.* (Mechanical World, Vol. 114, No. 2,950, 16/7/43, pp. 81-82.)
563	12662	G.B. ...	... *Descaling and Pickling Processes (Pt. II).* (H. Silman, Sheet Metal Industries, Vol. 17, No. 195, July, 1943, pp. 1199-1205.)

Riveting and Boring.

564	12923	G.B. ...	... *"Centerscope" for Accurate Setting for Precision Boring.* (Engineer, Vol. 176, No. 4,571, 20/8/43, p. 154.)
565	12942	Switzerland	... *Problems in Riveting Light Alloy Sheet.* (Light Metals, Vol. 6, No. 63, April, 1943, pp. 166-168.)

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			Machines and Tools.
566	12485	G.B.	*Precision Automatic Machine Tool Operation (an Interchangeable Electro-Hydraulic Duplicating Control for Operating Machine Tool Spindles).* (Mechanical World, Vol. 114, No. 2,950, 16/7/43, pp. 72-75.)
567	12710	G.B.	*Development and Application of Thread Grinding Machines.* (Automobile Engineer, Vol. 33, No. 439, Aug., 1943, pp. 317-320.)
568	12765	U.S.A. ...	*Selection of Tool Steel by its Hardenability (including Data Sheet).* (S. M. de Poy, Metal Progress, Vol. 43, No. 6, June, 1943, pp. 917-918.)
569	12793	U.S.A. ...	*Hi-Shear Rivet Saves Weight.* (Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, p. 112.)
570	12853	U.S.A. ...	*A New Method of Tool Finishing.* (Automatic Industries, Vol. 89, No. 2, 15/7/43, p. 68.)
571	12887	G.B.	*Press Equipped with Electro-Static High Frequency Heating for Bonding Plastic Materials.* (P. D. Zottu, Engineers' Digest, Vol. 4, No. 4, April, 1943, pp. 107-111.)
572	12928	G.B.	*Adjustable Form-Turning Tools.* (Machinery, Vol. 62, No. 1,599, 3/6/43, pp. 605-606.)
573	12931	G.B.	*Punches and Punching Operations.* (J. Garland, Machinery, Vol. 62, No. 1,601, 17/6/43, pp. 652-658.)
574	12936	G.B.	*Loading Chart for Rivet-Making Machines.* (R. Fleischmann, Machinery, Vol. 62, No. 1,600, 10/6/43, p. 623.)
575	12948	G.B.	*Cutting Tool Life and Efficiency.* (Light Metals, Vol. 6, No. 63, April, 1943, pp. 203-206.)
576	13126	G.B.	*Spindle Bearings for Machine Tools.* (G. Schlesinger, Machinery, Vol. 63, No. 1,608, 5/8/43, pp. 158-160.)
577	13129	G.B.	*Recommended Tool Angles, Feeds, Speeds, etc., for Machining with Cemented Carbide Tools.* (Machinery, Vol. 62, No. 1,602, 24/6/43, p. 679.)
578	13159	G.B.	*Form Relieving Milling Cutters.* (Machinery, Vol. 63, No. 1,605, 15/7/43, pp. 66-67.)
579	13160	G.B.	*Shear Tools for Interrupted Cutting.* (Machinery, Vol. 63, No. 1,605, 15/7/43, pp. 69-71.)
			C. Inspection.
			General, including Interchangeability.
580	12530	G.B.	*The Inspection of Steel Forgings.* (Aircraft Prod., Vol. 5, No. 57, July, 1943, p. 314.)
581	12556	U.S.A. ...	*Testing War Equipment.* (G. M. Barnes, S.A.E. Journal, Vol. 51, No. 1, July, 1943, pp. 21-23, 50.)
582	12562	U.S.A. ...	*Progress in Precision—Inspection Methods in the Automotive Industry.* (O. J. Snider, S.A.E. Journal, Vol. 51, No. 1, July, 1943, pp. 65-66.)
583	13050	G.B.	*Quality Control.* (W. A. Bennett and J. W. Rodgers, Aircraft Production, Vol. 5, No. 54, April, 1943, pp. 172-175.)

ITEM NO.	R.T.P. REF.		TITLE AND JOURNAL.
			Mechanical Tests.
584	12478	U.S.A. ...	*Complete List of A.S.T.M. Emergency Specifications and Emergency Alternative Provisions.* (A.S.T.M., No. 122, May, 1943, pp. 56-57.)
585	12702	U.S.A. ...	*Long Time Tension Test of Plastics,* (Modern Plastics, Vol. 20, No. 7, March, 1943, pp. 106, 144.)
586	12996	U.S.A. ...	*Testing Transparent Plane Sections Under Operating Conditions.* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 295-299.)
			Chemical Analysis.
587	12774	U.S.A. ...	*Chemical Analysis by Colorimeter.* (Metal Progress, Vol. 43, No. 6, June, 1943, p. 910.)
588	12944	Switzerland ...	*Routine Analysis of Aluminium Alloys.* (Light Metals, Vol. 6, No. 63, April, 1943, pp. 175-179.)
			Optical Methods and Electro-Optics.
589	12663	G.B.	*"Hyglo" Process of Crack Detection.* (Sheet Metal Industries, Vol. 17, No. 195, July, 1943, p. 1207.)
590	12730	G.B.	*Electron Diffraction.* (G. P. Thomson, J. Inst. Metals, Vol. 69, No. 5, May, 1943, pp. 191-199.)
591	12771	U.S.A. ...	*Use of Spectrograph for Analysis of Residual Alloys in Scrap.* (Metal Progress, Vol. 43, No. 6, June, 1943, p. 944.)
592	12933	G.B.	*Locating Holes with Gauge Blocks and Microscope.* (Machinery, Vol. 62, No. 1,601, 17/6/43, p. 661.)
593	12953	G.B.	*High Temperature Microscopy and Photomicrography for the Examination of Metals and Refactories.* (H. W. Greenwood, Light Metals, Vol. 6, No. 62, March, 1943, pp. 124-133.)
594	12961	Germany ...	*Election Microscope Studies of Aluminium Surfaces.* (Semmler, Light Metals, Vol. 6, No. 60, Jan., 1943, pp. 20-24.)
			Electrical and Magnetic Methods and X-Ray Analysis.
595	12385	G.B.	*X-Ray Counting Tubes.* (Engineer, Vol. 176, No. 4,570, 13/8/43, p. 134.)
596	12844	U.S.A. ...	*Basic Principles of X-Ray Diffraction.* (R. Taylor, Automotive Industries, Vol. 89, No. 2, 15/7/43, pp. 28-30.)
597	12968	Germany ...	*Determining Tin in Secondary Aluminium Vibration of Overhead Transmission.* (Steinhäuser and Aust, Light Metals, Vol. 6, No. 60, Jan., 1943, p. 32.)
598	12970	G.B.	*X-Rays and the Light Metal Industry.* (E. J. Tunnicliffe, Light Metals, Vol. 6, No. 60, Jan., 1943, pp. 38-46.)
			INSTRUMENTS.
			Electrical, Electronic, etc.
599	12639	G.B.	*The Cathode Ray Oscillograph in Industry (Book Review).* (W. Wilson, Engineering, Vol. 156, No. 4,048, 13/8/43, p. 124.)

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600	12688	Germany	...	*Remote Transmission and Recording of Torque, Speed and Power.* (From A.T.Z., Vol. 45, No. 7, April 10, 1942, pp. 191-192.) (Engel, Engineers' Digest, Vol. 4, No. 3, March, 1943, p. 96.)
601	12892	U.S.S.R.	...	*A Photo-Magnetic Defectoscope.* (Zavodskaja Laboratoria, Moscow, Vol. 10, No. 3, March, 1941, pp. 279-281.) (M. M. Sliozberg, Engineers' Digest, Vol. 4, No. 4, April, 1943, pp. 117-118.)
602	12995	U.S.A.	...	*Electric Torque Meters for Aircraft Engines.* (R. L. Findley, Aero Digest, Vol. 42, No. 6, June, 1942, pp. 285-291, 339.)
603	13084	G.B. ...	...	*Telemetering of Fluids—II.* (Mechanical World, Vol. 114, No. 2,952, 30/7/43, pp. 133-136.)
604	13085	G.B. ...	...	*Telemetering of Fluids—the Distant Transmission of Industrial Readings.* (Mechanical World, Vol. 114, No. 2,951, 23/7/43, pp. 88-89.)
605	13676	U.S.A.	...	*New Electronic Meter (Gen. Electric Co.) Measures Extremely Short Time Intervals.* (Mech. Engg., Vol. 65, No. 6, June, 1943, pp. 28-29.)

Mechanical, Physical, etc.

606	12498	Canada	...	*Needle Bearings for Aircraft Uses.* (H. W. Haynes, Canadian Aviation, Vol. 16, No. 4, April, 1943, pp. 120-122.)
607	12665	G.B. ...	...	*A Circular Slide Rule for Rapid Determination of Manometer Pressure on Hydraulic Presses Using Rubber Dies.* (Sheet Metal Industries, Vol. 17, No. 195, July, 1943, pp. 1208-1228.)
608	12630	U.S.A.	...	*New Thermometer.* (American Aviation, Vol. 6, No. 24, 15/5/43, p. 57.)
609	12700	U.S.A.	...	*Steps for Prolonging Instrument Life.* (T. A. Cohen, Modern Plastics, Vol. 20, No. 7, March, 1943, pp. 96-97, 142.)
610	12976	U.S.A.	...	*New System of Spare Parts Selection Aids Production and Field Servicing of Aircraft Instruments.* (H. N. Droge, Aero Digest, Vol. 42, No. 6, June, 1943, pp. 151-153.)
611	13112	U.S.A.	...	*Sperry's Automatic Computing Sight (for .50 Calibre Machine Guns).* (American Aviation, Vol. 7, No. 4, 15/7/43, p. 26.)

PRODUCTION.

Organisation and Control.

612	12358	U.S.A.	...	*U.S.A. Aircraft Production,* 1942 *and* 1943. (Inter. Avia., No. 871, 26/5/43, pp. 17-18.)
613	12533	G.B. ...	...	*Regional Production Organisation.* (Aircraft Prod., Vol. 5, No. 57, July, 1943, p. 329.)
614	12615	U.S.A.	...	*National Aircraft War Production Council to Aid U.S. Industry.* (American Aviation, Vol. 6, No. 23, 1/5/43, pp. 13, 16-17, 62.)
615	12667	G.B. ...	...	*Production Control.* (A. J. Milne, Sheet Metal Industries, Vol. 17, No. 195, July, 1943, pp. 1210-1212.)
616	12695	Canada	...	*Canada's Plastics Industry in War Time.* (H. McCann, Modern Plastics, Vol. 20, No. 7, March, 1943, pp. 76-77, 154.)

ITEM NO.	R.T.P. REF.		TITLE AND JOURNAL.
617	12808	U.S.A. ...	*Ten Years' Progress in Management, Purchasing. Inspection, Statistical Control, Standardization, Marketing, etc.* (Trans. A.S.M.E., Vol. 65, No. 3, April, 1943, pp. 213-260.)
618	12830	U.S.A. ...	*Nazi Heavy Industry.* (Industrial Eng. Chemistry, Vol. 21, No. 13, 10/7/43, p. 1116.)
619	12971	Switzerland ...	*Swiss Aluminium Industry on Wartime Basis.* (Light Metals, Vol. 6, No. 60, Jan., 1943, pp. 47-52.)
620	12978	U.S.A. ...	*Flow of Material Through Official Warehouses.* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 156-159.)
621	12991	U.S.A. ...	*Curtiss-Wright Production Drive (Posters, Propaganda, etc.).* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 237-240, 339.)
622	12999	U.S.A. ...	*The Split Shift as a Solution of the Manpower Problem.* (B. R. Otto, Aero Digest, Vol. 42, No. 6, June, 1943, pp. 313, 438.)
623	13015	U.S.A. ...	*Control of Absenteeism in Industry.* (L. V. Spencer, Aero Digest, Vol. 42, No. 4, April, 1943, pp. 135-136, 157-159, 278-290.)
624	13019	U.S.A. ...	*Efficient Production Management Achieved by Careful Controls (Pt. I).* (C. H. Speck, Aero Digest, Vol. 42, No. 4, April, 1943, pp. 184-186, 207-208.)
625	13038	U.S.A. ...	*The Furniture Industry Mobilised for Aircraft Production.* (Aero Digest, Vol. 42, No. 4, April, 1943, pp. 145-157.)
626	13046	G.B.	*Selection of Labour.* (Aircraft Production, Vol. 5, No. 54, April, 1943, pp. 170-171.)
627	13066	Canada ...	*Directory of Sources of Supply for the Aircraft Industry in Canada.* (Canadian Aviation, Vol. 16, No. 6, June, 1943, pp. 119-182.)
628	13070	U.S.A. ...	*Absenteeism Under Control at Vultee.* (A. R. Baish, Automotive Industries, Vol. 88, No. 12, 15/6/43, pp. 22-24, 74.)

Research and Training.

629	12357	U.S.A. ...	*Curtiss-Wright New Laboratories.* (Inter. Avia., No. 871, 26/5/43, p. 16.)
630	12415	G.B.	*Research at the I.A.E.* (Engineering, Vol. 156, No. 4,047, 6/8/43, p. 109.)
631	12656	G.B.	*Industrial Research in Great Britain. A Policy for the Future.* (P. Dunsheath, Civil Engineering, Vol. 38, No. 441, March, 1943, p. 46.)
632	12675	G.B.	*The Training of Physicists (Report).* (Sheet Metal Industries, Vol. 17, No. 195, July, 1943, p. 1232.)
633	12824	U.S.A. ...	*Goodyear's New Research Laboratory. Korrseal Sheet (Plasticised Polyvinyl Chloride) as Insulator for Chrome Hardening Surfaces of Engine Cylinders, etc.* (F. J. Van Antwerpen, Industrial Eng. Chemistry, Vol. 21, No. 13, 10/7/43, pp. 1056-1059, 1074.)

ITEM NO.	R.T.P. REF.		TITLE AND JOURNAL.
			Aircraft Production Methods.
634	13074	U.S.A. ...	*Curtiss-Wright New Research Laboratory.* (W. E. Voisine, Automotive Industries, Vol. 88, No. 12, 15/6/43, pp. 38-39, 60.)
635	13101	U.S.A. ...	*Research and the War Effort in the U.S.A.* (Engineers' Digest, Vol. 4, No. 5, May, 1943, pp. 131-133.)
636	13152	G.B.	*Natural Policy of Technical Education (Pamphlet).* (Nature, Vol. 152, No. 3,850, 14/8/43, p. 184.)
637	12453	G.B.	*De Havillands on Airscrew Surgery.* (Aeroplane, Vol. 65, No. 1,676, 9/7/43, pp. 32, 46-48.)
638	12526	U.S.A. ...	*Aircraft Plywood and its Finishing Requirements—Pt. IV.* (C. A. Carter, Commercial Aviation, Vol. 5, No. 4, April, 1943, pp. 120-122.)
639	12527	U.S.A. ...	*Increased Production of Aircraft Tubing.* (Commercial Aviation, Vol. 5, No. 4, April, 1943, pp. 124-126.)
640	12528	G.B.	*Producing Bomber Castings—Pt. II.* (J. A. Oates, Aircraft Prod., Vol. 5, No. 57, July, 1943, pp. 307-312.)
641	12541	U.S.A. ...	*Ford Liberator Production.* (Aircraft Prod., Vol. 5, No. 57, July, 1943, pp. 347-349.)
642	12590	Canada ...	*Canadian Production of Trainers (P.T. 23, P.T. 26, Cornell).* (Canadian Aviation, Vol. 16, No. 3, March, 1943, pp. 46-52.)
643	12595	Canada ...	*Decalcomania Transfers Used on Aircraft (Roundels, Lettering, etc.).* (Canadian Aviation, Vol. 16, No. 3, March, 1943, pp. 91-92, 102.)
644	12618	U.S.A. ...	*New Greaseproof Paper for Protecting Metal Parts.* (American Aviation, Vol. 6, No. 23, 1/5/43, p. 53.)
645	12669	G.B.	*Avoiding Weak Points in Aircraft Construction.* (A. Dickason, Sheet Metal Industries, Vol. 17, No. 195, July, 1943, pp. 1226-1228.)
646	12843	U.S.A. ...	*Douglas Inspection System.* (C. C. Harrison, Automotive Industries, Vol. 89, No. 2, 15/7/43, pp. 24-25, 92.)
647	12847	U.S.A. ...	*Mechanized Assembly Line to Double Output of P. 38 Fighters.* (R. R. Kay, Automotive Industries, Vol. 89, No. 2, 15/7/43, pp. 32-33, 82-85.)
648	12848	U.S.A. ...	*Separation Method Increases Liberator Nose Section Output.* (Automotive Industries, Vol. 89, No. 2, 15/7/43, pp. 34-35, 85.)
649	12920	G.B.	*Aircraft Production (10th Report of Select Committee on National Expenditure).* (Engineer, Vol. 176, No. 4,511, 20/8/43, pp. 143-144.)
650	12950	G.B.	*Industrial Radiographic Technique.* (H. E. Seamann, Light Metals, Vol. 6, No. 62, March, 1943, pp. 113-114.)
651	13006	U.S.A. ...	*Reducing Time for Assembling a Wing Flap Actuating Cylinder by Precision Built Jig.* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 355-357.)
652	13020	U.S.A. ...	*"Power Packages" for Aircraft (Electrically Operated Accessories).* (J. J. Horan, Aero Digest, Vol. 42, No. 4, April, 1943, pp. 194-197, 420.)

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653	13029	U.S.A. ...	*Radiography of Aircraft Castings.* (R. Taylor, Aero Digest, Vol. 42, No. 4, April, 1943, pp. 238-240, 264-265.)
654	13036	U.S.A. ...	*Production Short Cuts.* (Aero Digest, Vol. 42, No. 4, April, 1943, pp. 336-344.)
655	13042	G.B.	*Plastic Finishes (Runeslite Processes).* (Aircraft Production, Vol. 5, No. 54, April, 1943, p. 158.)
656	13043	G.B.	*Avro Lancaster, Pt. IV (Final Assembly).* (Aircraft Production, Vol. 5, No. 54, April, 1943, pp. 159-165.)
657	13049	U.S.A. ...	*An Overhead Conveyor (Glenn Martin System).* (Aircraft Production, Vol. 5, No. 54, April, 1943, p. 200.)
658	13064	Canada ...	*Spot Welding in Design and Production of Aircraft—Pt. II.* (G. S. Mikhalapov, Canadian Aviation, Vol. 16, No. 6, June, 1943, pp. 111-114.)
659	13069	U.S.A. ...	*Vega Engineering Simplifies Production Methods.* (R. A. Trumpis, N. Irwin, Automotive Industries, Vol. 88, No. 12, 15/6/43, pp. 20-21, 94.)
660	13156	G.B.	*Assembly Operations in the Manufacture of the Jerrican (Petrol Container).* (Machinery, Vol. 63, No. 1,605, 15/7/43, pp. 57-62.)

Production Methods for Engines, Instruments, etc.

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661	12521	U.S.A. ...	*Studebaker Builds Wright Cyclones.* (Commercial Aviation, Vol. 5, No. 4, April, 1943, pp. 89-90.)
662	12621	U.S.A. ...	*Conveyor Belt Production of Curtiss Electric Propellers (Photograph).* (American Aviation, Vol. 6, No. 23, 1/5/43, p. 58.)
663	12751	U.S.A. ...	*Centrifugal Casting Saves Time on Engine Cylinders.* (American Aviation, Vol. 7, No. 2, 15/6/43, p. 64.)
664	12849	U.S.A. ...	*Production of Piston Rings (Description of Plant and Methods of Production).* (J. Geschelin, Automotive Industries, Vol. 89, No. 2, 15/7/43, pp. 36-40, 90.)
665	12889	Germany ...	*Turbo Compressors in the Metallurgical Industry.* (From Stahl and Eisen, Vol. 62, Nos. 28-29, July 9 and 16, 1942, pp. 588-591, 608-612.) (F. Kluge, Engineers' Digest, Vol. 4, No. 4, April, 1943, pp. 113-115.)
666	12925	G.B.	*Fine Pitch Thread Production.* (Machinery, Vol. 62, No. 1,599, 3/6/43, p. 595.)
667	12926	G.B.	*Operations in the Production of a Sub-Machine Gun.* (Machinery, Vol. 62, No. 1,599, 3/6/43, pp. 596-597.)
668	12930	G.B.	*Operations in Submarine Chaser Engine Production.* (Machinery, Vol. 62, No. 1,601, 17/6/43, pp. 645-649.)
669	12981	U.S.A. ...	*New Ford Tractor Operating Propeller Hoist (for Removing or Mounting Propellers).* (Aero Digest, Vol. 42, No. 6, June, 1943, p. 176.)
670	12988	U.S.A. ...	*Surface Finishing Methods for Aircraft Engines.* (F. M. Reck, Aero Digest, Vol. 42, No. 6, June, 1943, pp. 213-217.)

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671	13005	U.S.A.	...	*Specially Designed Cutters Boost Cylinder Output.* (Aero Digest, Vol. 42, No. 6, June, 1943, p. 355.)
672	13009	U.S.A.	...	*Ford Production of Turbo Superchargers.* (Aero Digest, Vol. 42, No. 6, June, 1943, p. 447.)
673	13030	U.S.A.	...	*Mass Production of Sperry Instruments.* (Aero Digest, Vol. 42, No. 4, April, 1943, pp. 247-252.)
674	13053	G.B. ...	...	*Undercuts for Threads.* (Aircraft Production, Vol. 5, No. 54, April, 1943, p. 176.)
675	13073	U.S.A.	...	*Studebaker Produces 63 Gears and Assemblies for the Wright Cyclone Engine.* (J. Geschelin, Automotive Industries, Vol. 88, No. 12, 15/6/43, pp. 32-35, 67-70.)
676	13125	G.B. ...	...	*Shaving Aircraft Engine Gears.* (A. W. Harris, Machinery, Vol. 63, No. 1,608, 5/8/43, pp. 153-157.)

General Methods and Equipment.

677	12523	U.S.A.	...	*Easier Operation on Slanting Drill Table.* (Commercial Aviation, Vol. 5, No. 4, April, 1943, p. 104.)
678	12534	G.B. ...	...	*Radio Unit Generating High Frequency Energy for Firing Explosive Rivets.* (Aircraft Prod., Vol. 5, No. 57, July, 1943, p. 329.)
679	12800	U.S.A.	...	*Experiences in the Use of Electrostatic Fly Ash Precipitators.* (I. G. McChesney, Trans. A.S.M.E., Vol. 65, No. 3, April, 1943, pp. 143-148.)
680	12822	U.S.A.	...	*Water Treatment at the Calco Chemical Division.* (V. L. King and others, Industrial Eng. Chemistry (News Edition), Vol. 21, No. 13, 10/7/43, pp. 1046-1049.)
681	12879	G.B. ...	...	*Shop Loading (Effect on Production Costs, etc.).* (D. Tiranti, Aircraft Engineering, Vol. 15, No. 174, Aug., 1943, pp. 239-241.)
682	12937	G.B. ...	...	*Chain Welding by Semi-Automatic and Automatic Methods,* (Machinery, Vol. 62, No. 1,600, 10/6/43, pp. 626-629.)
683	12985	U.S.A.	...	*Republics Power-Driven Rotary Indexing Table on Vertical Miller for Continuous Milling of Rod Ends.* (Aero Digest, Vol. 42, No. 6, June, 1943, p. 196.)
684	13001	U.S.A.	...	*Efficient Wire Twisting Speeded by New Apparatus.* (Aero Digest, Vol. 42, No. 6, June, 1943, p. 349.)
685	13002	U.S.A.	...	*Cushioned Bar Speeds Buckling-up Process (Avoids Denting of Aluminium Stock).* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 349-351.)
686	13003	U.S.A.	...	*Universal Fixture Simplifies Tube and Wire Bending.* (Aero Digest, Vol. 42, No. 6, June, 1943, p. 353.)
687	13004	U.S.A.	...	*Quick Method for Testing Spot Welds.* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 353-355.)
688	13054	U.S.A.	...	*American Practice in Machining, Moulding and Installation of Plexiglas.* (Aircraft Production, Vol. 5, No. 54, April, 1943, pp. 183-189.)

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689	13058	G.B. ...	... *Moulding and Machining to Obtain Simpler Tooling and Speedier Production.* (Aircraft Production, Vol. 5, No. 54, April, 1943, p. 196.)
690	13059	G.B. ...	... *Electro Magnetic Equipment for Crack Detection in Welded Steel Tubular Structures.* (Aircraft Production, Vol. 5, No. 54, April, 1943, pp. 201-202.)
691	13128	G.B. ...	... *Loading of Work Sections.* (A. G. McAdam, Machinery, Vol. 62, No. 1,602, 24/6/43, pp. 678-679.)
			Plants (Layout, etc.).
692	12555	U.S.A.	... *Interior Photo of Douglas Aircraft Windowless Plant.* (American Aviation, Vol. 6, No. 22, 15/4/43, p. 60.)
693	12842	U.S.A.	... *Chevrolet's New Forge Plant.* (J. Geschelin, Automotive Industries, Vol. 89, No. 2, 15/7/43, pp. 20-23, 94.)
694	12947	G.B. ...	... *Light Alloys in Industrial Plant and Equipment.* (Light Metals, Vol. 6, No. 63, April, 1943, pp. 196-202.)
695	13013	U.S.A.	... *Willow Run Ford Bomber Plant.* (F. M. Reck, Aero Digest, Vol. 42, No. 4, April, 1943, pp. 112-115, 243-244, 256.)
696	13018	U.S.A.	... *Curtiss-Wright's Indiana Propeller Plant.* (Aero Digest, Vol. 42, No. 4, April, 1943, pp. 181, 188-192, 198, 276.)
			New Machines and Tools.
697	12512	U.S.A.	... *A New Jig for the Determination of Compression Yield Strength in Aircraft Design.* (Mech. Eng., Vol. 65, No. 5, May, 1943, p. 364.)
698	12600	U.S.A.	... *Small Tools for High Production.* (A. A. Schwartz, A.S.M.E. Preprints, 346, 1943.)
699	12681	Germany	... *Portable Universal Radial Drilling Machine for the Assembly Shop.* (From Werkstatt und Betrieb, Vol. 75, No. 9, Sept., 1942, pp. 221.) (Engineers' Digest, Vol. 4, No. 3, March, 1943, pp. 80-81.)
700	12984	U.S.A.	... *Fully Automatic Spar Riveter Used at Curtiss-Wright Plants.* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 195, 332-333.)
701	13044	U.S.A.	... *Plastic Punches for Drop Hammer and Hydraulic Press Tools.* (Aircraft Production, Vol. 5, No. 54, April, 1943, pp. 166-169.)
702	13063	Canada	... *Modern Jigs Used in Lancaster and Mosquito Canadian Manufacture.* (W. J. Jakimiuk, Canadian Aviation, Vol. 16, No. 6, June, 1943, pp. 105-111.)
			Salvage.
703	12884	G.B. ...	... *Salvage of Porous Castings.* (Engineers' Digest, Vol. 4, No. 4, April, 1943, p. 129.)
704	12927	G.B. ...	... *Salvage of Porous Castings.* (Machinery, Vol. 62, No. 1,599, 3/6/43, p. 604.)

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705	13024	U.S.A. ...	*General Motors Standardizes Tool Salvage Methods.* (Aero Digest, Vol. 42, No. 4, April, 1943, pp. 215-216, 270.)

Workers' Welfare, etc.

706	12532	G.B.	*Accident Proneness in Industry, Minimising Casualties.* (Aircraft Prod., Vol. 5, No. 57, July, 1943, pp. 328-329.)
707	12546	U.S.A. ...	*Women Who Work for Victory.* (W. G. Tuttle, Preprints of Papers at the A.S.M.E., June 14-16, 1943.)
708	12599	U.S.A. ...	*Women in War Industry.* (W. A. Simonds, A.S.M.E. Preprints, 331, 1943.)
709	12682	Germany ...	*Portable Electrical Ventilator for the Workshop.* (From Werkstatt und Betrieb., Vol. 75, No. 9, Sept., 1942, pp. 219-220.) (H. Rötscher, Engineers' Digest, Vol. 4, No. 3, March, 1943, pp. 81-82.)
710	12949	G.B.	*Hygiene of the Light Metal Industries. Precautions to be Taken in the Handling of Chemicals Employed in the Processing of Aluminium and Magnesium (Fluoride Poisoning).* (Light Metals, Vol. 6, No. 62, March, 1943, pp. 111-113.)
711	13048	U.S.A. ...	*Metal Safety Goggles.* (Aircraft Production, Vol. 5, No. 54, April, 1943, p. 171.)
712	13123	G.B.	*Mercury Vapour Lighting in Factory.* (Machinery, Vol. 63, No. 1,608, 5/8/43, p. 147.)
713	13144	G.B.	*Hours of Work and Their Influence on Health and Efficiency.* (H. M. Vernon, Bulletin of War Medicine, Vol. 3, No. 12, Aug., 1943, pp. 691-692.)

TRANSPORT.

Tanks and Military Vehicles.

714	12560	U.S.A. ...	*Suspension Design for Tanks.* (J. M. Colby, S.A.E. Journal, Vol. 51, No. 7, July, 1943, p. 64.)
715	12565	U.S.A. ...	*Lessons Learned from World War II about Designing for Accessibility (Maintenance of Army Vehicle Engines, etc.).* (E. S. van Deusen, S.A.E. Journal, Vol. 51, No. 7, July, 1943, pp. 36-38, 53-55.)
716	12566	U.S.A. ...	*Dust Problems in Military Vehicle Operations.* (L. F. Overholt, S.A.E. Journal, Vol. 51, No. 7, July, 1943, pp. 66-67.)
717	12567	U.S.A. ...	*Engines for Tanks.* (R. J. Icks, S.A.E. Journal, Vol. 51, No. 7, July, 1943, pp. 39-41, 56-57.)
718	12845	U.S.A. ...	*Dust, a Potent Enemy of Military Vehicles.* (Automotive Industries, Vol. 89, No. 2, 15/7/43, p. 30.)
719	13079	Germany ...	*New German Mark VI Tank (Photograph).* (Automotive Industries, Vol. 88, No. 12, 15/6/43, p. 48.)
720	13260	U.S.A. ...	*Army's Amphibious Truck.* (Automotive Industries, Vol. 89, No. 1, 1/7/43, p. 21.)

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721	13714	G.B. ...	... *The Daimler "Scout" Armed Reconnaissance Car.* (Automobile Engineer, Vol. 33, No. 437, June, 1943, pp. 219-227.)

Locomotives.

722	12506	U.S.A.	... *Future Possibilities of Diesel Road Locomotives.* (P. B. Jackson, Mech. Eng., Vol. 65, No. 5, May, 1943, pp. 335-338, 359.)
723	12507	U.S.A.	... *Diesel Locomotive Progress Under War Conditions.* (Mech. Eng., Vol. 65, No. 5, May, 1943, pp. 339-342.)
724	12545	U.S.A.	... *Influence of Post-War Materials and Machinery on Railway Freight Equipment.* (M. P. Taylor, Preprints of Papers at the A.S.M.E., June 14-16, 1943.)

WIRELESS AND ELECTRICITY.

Wireless.

Aircraft Radio Equipment.

725	12625	U.S.A.	... *First Details on Development of Radar (Radio Detecting and Ranging).* (American Aviation, Vol. 6, No. 24, 15/5/43, p. 19.)
726	12748	U.S.A.	... *Bendix Automatic Radio S.O.S. Device.* (American Aviation, Vol. 7, No. 2, 15/6/43, p. 62.)
727	12818	U.S.A.	... *Tuning Indicators and Circuits for Frequency Modulation Receivers.* (J. A. Rodgers, Procs. of I.R.E., Vol. 31, No. 3, March, 1943, pp. 89-93.)
728	12977	U.S.A.	... *Allied and Enemy Aircraft Radio Equipment.* (J. I. Waddington, Aero Digest, Vol. 42, No. 6, June, 1943, pp. 154-155, 333.)
729	13010	U.S.A.	... *Portable Hand Powered Radio Transmitter for Rescue Work.* (Aero Digest, Vol. 42, No. 6, June, 1943, pp. 447-449.)
730	13736	U.S.A.	... *Automatic Radio Transmitter for Crews Downed at Sea.* (Air Tech., Vol. 3, No. 1, 15/7/43, p. 8.)
731	13737	U.S.A.	... *Radio Navigation Aids.* (P. C. Sandretto, Air Tech., Vol. 3, No. 1, 15/7/43, pp. 16-18, 58.)

Antennas.

732	12409	G.B. ...	... *Aerial Characteristics and Coupling Systems (Data Sheet).* (Electronic Engineering, Vol. 15, No. 186, August, 1943, pp. 109-112.)
733	12860	U.S.A.	... *Loop Antennas for Aircraft.* (G. F. Levy, Proc. of the I.R.E., Vol. 31, No. 2, Feb., 1943, pp. 56/66.)
734	12861	U.S.A.	... *A Note on the Characteristics of the Two Antenna Aircraft.* (C. W. Harrison, Proc. of the I.R.E., Vol. 31, No. 2, Feb., 1943, pp. 75-78.)

Testing and Research.

735	12410	G.B. ...	... *Television After the War.* (Electronic Engineering, Vol. 15, No. 186, August, 1943, pp. 118-120.)
736	12426	G.B. ...	... *Radio Research on Metre Waves.* (Nature, Vol. 152, No. 3,846, 17/7/43, pp. 83-84.)

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737	12614	U.S.A. ...	*Altitude Test Inspection of Radio Apparatus in Bomber Nose Rest Chamber.* (American Aviation, Vol. 7, No. 1, 1/6/43, p. 62.)
738	12642	G.B.	*Radio Research and Production.* (G. M. Garro-Jones, Engineering, Vol. 156, No. 4,048, 13/8/43, p. 135.)
739	13130	G.B.	*Low Temperature Stratosphere Chamber for Testing Aircraft Parts and Radio Equipment.* (Machinery, Vol. 62, No. 1,602, 24/6/43, p. 681.)

General Electricity.

740	12362	G.B.	*Insulating Cables with Polyvinyl Chloride.* (Plastics, Vol. 7, No. 75, August, 1943, pp. 328-332.)
741	12364	Germany ...	*Protection of Overhead Cable Equipment.* (E.T.Z., Vol. 60, p. 1009.) (Perlick, Plastics, Vol. 7, No. 75, August, 1943, p. 334.)
742	12488	U.S.A. ...	*Testing Electrical Contacts.* (Mechanical World, Vol. 114, No. 2,950, 16/7/43, pp. 79-80.)
743	12689	Germany ...	*Leakage Currents, Their Cause and Properties.* (From Elektrontechnische Zeitschrift, Vol. 63, No. 19-20, May 21, 1942, pp. 237-241.) (R. Vieweg and H. Klingelhöffer, Engineers' Digest, Vol. 4, No. 3, March, 1943, pp. 90-91.)
744	12705	U.S.A. ...	*Electric Cable Insulation from Synthetic Rubber.* (Modern Plastics, Vol. 20, No. 7, March, 1943, p. 110.)
745	13109	Switzerland ...	*A New High Precision Method for Short Circuit Measurements on Transformers.* (Brown-Boveri Review, Vol. 29, No. 5, May, 1942, pp. 126-129.) (P. Waldvogel, Engineers' Digest, Vol. 4, No. 5, May, 1943, pp. 156-157.)

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746	12407	G.B.	*Physics and the Static Characteristics of Hard Vacuum Valves.* (J. H. Fremlin, Electronic Engineering, Vol. 15, No. 186, August, 1943, pp. 103-107.)
747	12406	G.B.	*Dust Cored Coils (Powder Filling).* (V. G. Welsby, Electronic Engineering, Vol. 15, No. 186, August, 1943, pp. 96-98.)

SOUND, LIGHT AND HEAT.

Sound Propagation.

748	13410	G.B.	*The Propagation of Sound in the Atmosphere.* (E. S. Richardson, Endeavour, Vol. 1, No. 3, July, 1942, pp. 118-121.)

Radiant Heat, Refrigeration, etc.

749	12505	U.S.A. ...	*How Air Conditioning Has Advanced Refrigeration.* (W. H. Carrier, Mech. Eng., Vol. 65, No. 5, May, 1943, pp. 332-334.)
750	12513	U.S.A. ...	*Specific Heats of Gases.* (Mech. Eng., Vol. 65, No. 5, May, 1943, p. 365.)
751	12712	G.B.	*Radiant Heat—The Application of Gas-Generated Infra-Red Rays.* (Automobile Engineer, Vol. 33, No. 439, Aug., 1943, pp. 326-329.)

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752	13098	U.S.A. ...	*Measurement of Ultra-Violet Solar Radiation in Washington*, 1936-1942. (W. W. Coblentz and R. Stair, J. of Research, National Bureau of Standards, Vol. 30, No. 6, June, 1943, pp. 435-447.)
753	13366	G.B.	*Thermal Conductivity Units*. (J. Jennings, Engineering, Vol. 156, No. 4,049, 20/8/43, pp. 154-155.)

Fluorescent Lighting, Photo-Electric Radiometry, etc.

754	12893	U.S.A. ...	*Fluorescent Lamps in the U.S.A.* (H. Hausner, Engineers' Digest, Vol. 4, No. 4, April, 1943. pp. 118-119.)
755	12967	G.B.	*Inspection of Sodium Light.* (Light Metals, Vol. 6, No. 60, Jan., 1943, p. 32.)
756	13083	G.B.	*Combined Discharge Fluorescent Lighting.* (Mechanical World, Vol. 114, No. 2,952, 30/7/43, pp. 120-121.)
757	13099	U.S.A. ...	*A Tungsten-in-Quartz Lamp and its Applications in Photo-Electric Radiometry.* (R. Stair and W. O. Smith, J. of Research, National Bureau of Standards, Vol. 30, No. 6, June, 1943, pp. 449-459.)
758	13148	G.B.	*Fluorescence of Organic Molecules.* (J. Weiss, Nature, Vol. 152, No. 3,850, 14/8/43, pp. 176-178.)

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759	12792	U.S.A. ...	*Navy's New Combat Camera.* (W. Stull, Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, p. 98.)
760	12819	U.S.A. ...	*The Focussing View Finder Problem in Television Cameras.* (G. L. Beers, Procs. of I.R.E., Vol. 31, No. 3, March, 1943, pp. 100-106.)
761	13055	G.B.	*Photography and Production.* (A. Batley and F. W. Coppin, Aircraft Production, Vol. 5, No. 54, April, 1943, pp. 190-194.)
762	13081	G.B.	*Photography as an Aid to Office Management.* (P. H. Billington, Mechanical World, Vol. 114, No. 2,952, 30/7/43, pp. 113-116.)
763	13249	G.B.	*Air Photography.* (J. L. Vachell, Aeroplane, Vol. 65, No. 1,682, 20/8/43, pp. 214-215.)
764	13614	G.B.	*Air Photography.* (Trade and Engineering Times, Vol. 53, No. 951, May, 1943, pp. 33-34.)

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(ASTRO-NAVIGATION, LIGHTNING, VAPOUR TRAILS, ETC.).

765	12389	Germany ...	*Vapour Trails.* (Flugsport, Vol. 35, No. 11, 14/7/43, pp. 151-152.)
766	12408	G.B.	*The Effect of Lightning on Receiving Aerials.* (J. F. Shipley, Electronic Engineering, Vol. 15, No. 186, August, 1943, p. 107.)
767	12833	G.B.	*Astronomical Navigation Without Mathematics.* (A. L. Mieville, J. of the Royal Aeron. Soc., Vol. 47, No. 392, Aug., 1942, pp. 273-283.)

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768	12862	U.S.A. ...	*Lightning Striking Frequencies for Various Heights.* (Proc. of the I.R.E., Vol. 31, No. 2, Feb., 1943, p. 79.)
769	12974	U.S.A. ...	*Great Circle Tracking (Celestial Navigation).* (T. Collins, Aero Digest, Vol. 42, No. 6, June, 1943, pp. 122-124, 139, 319, 336-338.)
770	13014	U.S.A. ...	*McMillen's Spherographical System of Celestial Navigation.* (D. Brouwer and F. W. Keator, Aero Digest, Vol. 42, No. 4, April, 1943, pp. 116-118, 139-140, 266-268.)

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771	11871	Germany ...	*Intestinal Movement in Anoxia.* (Abstract, Luftfahrtmedizin, Vol. 7, No. 1, 1942, pp. 98-117.) (G. A. Weltz and R. v. Werz, Bulletin of War Medicine, Vol. 3, No. 10, June, 1943, p. 585.)
772	11872	Switzerland ...	*Studies on Respiration and Sickness at High Altitudes and on Respiratory Regulation.* (K. Lenggenhager, Bulletin of War Medicine, Vol 3, No. 10, June, 1943, p. 585.)
773	11873	U.S.A. ...	*The Rôle of the Adrenal Cortex in Anoxia: The Effect of the Repeated Daily Exposures to Reduced Oxygen Pressure.* (G. W. Thorn and others, Bulletin of War Medicine, Vol. 3, No. 9, May, 1943, p. 525.)
774	11874	Germany ...	*Structional Changes in Generalized Anoxia.* (Luftfahrtmedizin, Vol. 6, No. 4, pp. 281-295, July 30, 1942.) (F. Büchner, Bulletin of War Medicine, Vol. 3, No. 9, May, 1943, p. 526.)
775	11875	Germany ...	*Acidosis of Cardiac Muscle During Oxygen Lack.* (Luftfahrtmedizin, Vol. 6, No. 4, July 30, 1942, pp. 296-302.) (K. Gollwitzer-Meier, Bulletin of War Medicine, Vol. 3, No. 9, May, 1943, p. 526.)
776	11876	Germany ...	*Electrical Phenomena Accompanying Anoxia of the Peripheral Nervous System.* (Luftfahrtmedizin, Vol. 6, No. 4, July 30, 1942, pp. 314-322.) (H. Schaefer, Bulletin of War Medicine, Vol. 3, No. 9, May, 1943, p. 526.)
777	11877	Germany ...	*Intercranial Circulation in Anoxia Collapse.* (Luftfahrtmedizin, Vol. 6, No. 4, July 30, 1942, pp. 323-326.) (M. Schneider, Bulletin of War Medicine, Vol. 3, No. 9, May, 1943, p. 527.)
778	11878	Germany ...	*Duration of Consciousness in Parachute Descents.* (Luftfahrtmedizin, Vol. 6, No. 4, July 30, 1942, pp. 327-332.) (H. v. Diringshofen, Bulletin of War Medicine, Vol. 3, No. 9, May, 1943, p. 527.)
779	11879	Germany ..	*Safety Period in Parachute Descent from High Altitude.* (Luftfahrtmedizin, Vol. 6, No. 4, 1942, pp. 340-355.) (O. Gauer and others, Bulletin of War Medicine, Vol. 3, No. 9, May, 1943, pp. 527-528.)
780	11880	Switzerland ...	*Circulation and Vegetative Nervous System in High Altitude Flying.* (H. Meier-Müller, Bulletin of War Medicine, Vol. 3, No. 9, May, 1943, p. 528.)

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781	11881	Canada ...	*Some Observations on Ear, Nose and Throat Disabilities Associated with Aviation.* (R. S. Pentecost, Bulletin of War Medicine, Vol. 3, No. 9, May, 1943, pp. 528-529.)
782	11885	G.B.	*Preventive Medicine in Relation to Aviation.* (Proc. Roy. Soc. Med., 1939, Vol. 32, pp. 455-472.) (H. E. Whittingham, Bulletin of War Medicine, Vol. 1, No. 3, Jan., 1941, pp. 190-192.)
783	11886	G.B.	*The Emotional Factor in Service Aviation.* (J. Roy. Nav. Med. Serv., 1939, April, Vol. 25, No. 2, pp. 108-119.) (B. C. Archer, Bulletin of War Medicine, Vol. 1, No. 3, Jan., 1941, pp. 192-193.)
784	11887	G.B.	*The Place of the Electrocardiograph in the Examination for Flying. A Discussion of the Electrocardiograph in the Flying Examination, its Possibilities and Limitations.* (J. Aviation Med., 1939, March, Vol. 10, No. 1, pp. 31-43.) (Bulletin of War Medicine, Vol. 1, No. 3, Jan., 1941, pp. 193-194.)
785	11888	G.B.	*Air Sickness.* (T. S. Rippon, Practitioner, 1940, April, Vol. 144, pp. 411-420.) (Bulletin of War Medicine, Vol. 1, No. 3, Jan., 1941, p. 194.)
786	11889	G.B.	*The Toxicity of Carbon Monoxide at High Altitudes.* (J. Aviation Med., 1939, Dec., Vol. 10, No. 4, pp. 211-215.) (J. W. Heim, Bulletin of War Medicine, Vol. 1, No. 3, Jan., 1941, p. 194.)
787	11891	G.B.	*Pilot Fitness for Night Flying.* (Science, 1939, March 10, Vol. 89, pp. 223-226.) (C. E. Ferree and G. Rand, Bulletin of War Medicine, Vol. 1, No. 3, Jan., 1941, p. 196.)
788	11892	G.B.	*Effect of Centrifugal Force in Flying.* (Proc. Staff Meeting, Mayo Clinic, 1939, Sept. 27, Vol. 14, pp. 612-618.) (R. B. Phillips and C. Sheard, Bulletin of War Medicine, Vol. 1, No. 3, Jan., 1941, pp. 196-197.)
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790	11895	U.S.A. ...	*The Rôle of Aviation Medicine in the Development of Aviation.* (Internat. Cong. Military Med. and Pharm., Washington, D.C., 1939, Vol. 2, pp. 81-95.) (A. D. Tuttle and H. G. Armstrong, Bulletin of War Medicine, Vol. 1, No. 4, March, 1941, pp. 259-260.)
791	11896	G.B.	*Medical Problems of High Altitude Flying.* (J. Nat. and Clin. Med., 1940, Oct., Vol. 26, No. 1, pp. 263-271.) (H. A. Armstrong and J. W. Heim, Bulletin of War Medicine, Vol. 1, No. 4, March, 1941, pp. 260-262.)
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793	11899	G.B. ...	... *Pilot Fitness. A Safety Factor in Aviation.* (Brit. J. Ophthalm., 1940, Dec., Vol. 24, No. 12, pp. 581-597.) (C. E. Ferree and G. Rand, Bulletin of War Medicine, Vol. 1, No. 4, March, 1941, pp. 264-265.)
794	11900	Germany	... *Altitude Sickness.* (Deut. Med. Woch., 1940, May 3, Vol. 66, No. 18, pp. 485-488.) (A. Rühl, Bulletin of War Medicine, Vol. 1, No. 4, March, 1941, pp. 264-265.)
795	11903	G.B. ...	... *The Effect of Anoxia in High Altitude Flights on the Electrocardiogram.* (J. Aviation Med., 1940, Dec., Vol. 11, No. 4, pp. 166-178.) (M. S. White, Bulletin of War Medicine, Vol. 1, No. 6, July, 1942, p. 409.)
796	11901	G.B. ...	... *The Auditory Apparatus and Aviation.* (Lancet, Jan. 4, 1941, pp. 8-9.) (E. Wodak, Bulletin of War Medicine, Vol. 1, No. 4, March, 1941, p. 265.)
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798	12584	U.S.A.	... *Limits of Human Heat Regulation.* (L. H. Newburgh and others, Aero Sciences, Vol. 10, No. 6, June, 1943, pp. 197-199.)
799	12779	U.S.A.	... *Keeping Pilots Fit.* (A. H. McCormick, Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, pp. 51-52, 154-156.)
800	12784	U.S.A.	... *Prevention of Air Sickness.* (G. R. Wendt, Flying and Industrial Aviation, Vol. 32, No. 4, April, 1943, pp. 58-60, 142-144.)
801	13120	U.S.A.	... *Effect of Altitude on Pilots' Teeth (Metal Fillings).* (American Aviation, Vol. 7, No. 4, 15/7/43, p. 18.)
802	13140	U.S.A.	... *Physiology of Flying. Hazards and Remedies.* (D. B. Dill, Bulletin of War Medicine, Vol. 3, No. 12, Aug., 1943, p. 690.)
803	13141	U.S.A.	... *Some Problems in Aviation Medicine.* (A. Graybiel, Bulletin of War Medicine, Vol. 3, No. 12, Aug., 1943, pp. 690-691.)
804	13142	G.B. ...	... *Further Investigation of Night Vision Among Personnel of an A.A. Unit.* (B. St. J. Steadman, Bulletin of War Medicine, Vol. 3, No. 12, Aug., 1943, p. 691.)
805	13143	G.B. ...	... *Incidence of Pulmonary Tuberculosis of Adult Type in the R.A.F. Results of Mass Radiography of 75,000 Cases.* (A. G. Evans, Bulletin of War Medicine, Vol. 3, No. 12, Aug., 1943, pp. 671-672.)
806	13145	G.B. ...	... *Night Visual Capacity of Psychological Cases.* (P. C. Livingston and B. Bolton, Bulletin of War Medicine, Vol. 3, No. 12, Aug., pp. 682-683.)
807	13146	G.B. ...	... *Medical Manual of Chemical Warfare.* (Bulletin of War Medicine, Vol. 3, No. 12, Aug., 1943, p. 683.)

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809	12476	U.S.A.	... *Interpolation by Means of a Cubic Curve (with Application to Hardness Determination).* (L. H. Fry, A.S.T.M., No. 122, May, 1943, pp. 29-30.)
810	12859	G.B. ...	... *A Simple Method of Constructing Stability Diagrams.* (W. S. Brown, R. and M., No. 1,905, 10/10/42, pp. 1-5.)
811	12983	U.S.A.	... *Simplification of Dynamic Stability Computations (Pt. II).* (M. M. Munk, Aero Digest, Vol. 42, No. 6, June, 1943, pp. 183-185, 327.)
812	12987	U.S.A.	... *Lofting Problems of Streamline Bodies (Pt. 14).* (C. M. Hartley and R. A. Liming, Aero Digest, Vol. 42, No. 6, June, 1943, pp. 205-209, 321.)
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814	13039	G.B. ...	... *The Operational Calculus.* (H. T. H. Piaggio, Nature, Vol. 152, No. 3,847, 24/7/43, p. 63.)
815	13172	U.S.A.	... *Euler's Number (Study of Cavitation).* (Mechanical Engg., Vol. 65, No. 8, Aug., 1943, p. 597.)