

C.S.

PUBLIC WORKS

(Miscellaneous)

1924.

No. 714/24

1E. "D"

H. E. the Governor.

SUBJECT.

192 4

11th November

Previous Paper.

Respecting possibilities of using wind driven Dynamos.

MINUTES.

*Minutes from H.E. the Governor of 12th November 1924 — Encl ①*

*2 Dec ✓*

*Ch. Refused  
T. H. 17 Nov. 24*

The Hon. Col. Secy.,

From the pamphlet it would appear that only the prime mover, dynamo, battery and switchboard are included in the plant. The wire, fittings, lamps, etc. for the interior of the house would be an additional charge.

The largest size quoted is No. 1A which gives twenty 20 watt lamps as the average number in use at one time.

The cost of the windmill plant would be.....£196.

" " " " battery would be.....£137 £333.

2. Prior to 1914 a Country House lighting equipment, (oil engine) plant and material for an installation of sixty 10 c.p. Osram lamps with battery, wire, fittings and lamps, would have cost about £140 in England: say £300 to day.

3. In 1914 the windmill at the Camber for pumping water from the underground cistern to the reservoir on the hill was repaired and/

Subsequent Paper.

repaired and put in working order by H.M.S. "Canopus": New sails and arms of a heavy pattern were fitted and the governor control practically renewed. A test was made about the 1st December, but on the 8th of December the wind blew the sails away and smashed several of the arms although the governor was functioning.

I understand that this had occurred several times. The windmill now has been removed and a rotor pump installed.

4. It is essential that the prime mover for charging a storage battery should run at a steady and even rate; this, I fear, is not possible with a windmill however well governed it might be, particularly in this Colony, at least in Stanley. The wind varies from force 3 (9.7 miles per hour) to force 6 (27.5 miles per hour) in a short time and I am of opinion that, for effective working, the wind should be at 15 miles velocity blowing for 8 hours daily: This rarely occurs in Stanley.

*or amplifier etc  
H.H.H.*

5. I think that the most satisfactory plant for private house or street lighting would be with oil driven prime mover. The extra expense in connexion with street lighting would be the wiring and the comparatively high power required to allow for fall in voltage due to length of street cable required for distribution.

*R. D. Asaley*

Colonial Engineer.

18/11/24.

*Y.S.  
submitted.*

*It does not appear that the apparatus would be of any use for town lighting.*

*N<sup>o</sup>. 1 should serve amply for the Town Hall or Government House. The F.O.B. cost would be about £250. There would be very great economy in running <sup>over an oil engine</sup> windmills. Windmills work as Y.S. is aware very satisfactorily on many*

farmers on the Coast where the conditions as to wind are very closely analogous to those found here. The fact of the windmill at the Chamber, which was wrecked by the heavy gale having come to grief should not I think prejudice consideration.

~~19 Nov. 24~~ 19 Nov. 24

H.P.S.

I am reluctant to spend the money on a test. A wind driven dynamo can be employed for lighting houses & from building an experimental form. It would also be an advantage to have electric power there.

J.H.

21 November 1924

Attach to map. with Report on Sheep Industry for present file

~~21 Nov. 24~~ 21 Nov. 24

John Treasurers

You have taken some interest in wind power for lighting and you would like to see the enclosed

~~25 Nov. 24~~ 25 Nov. 24

638/24  
attached  
28/11/24

Hon. Col: 124

Thank you. Noted

H. Thompson

2. 11. 24

From His Excellency the Governor

(1)

to The Honourable the Colonial Secretary.

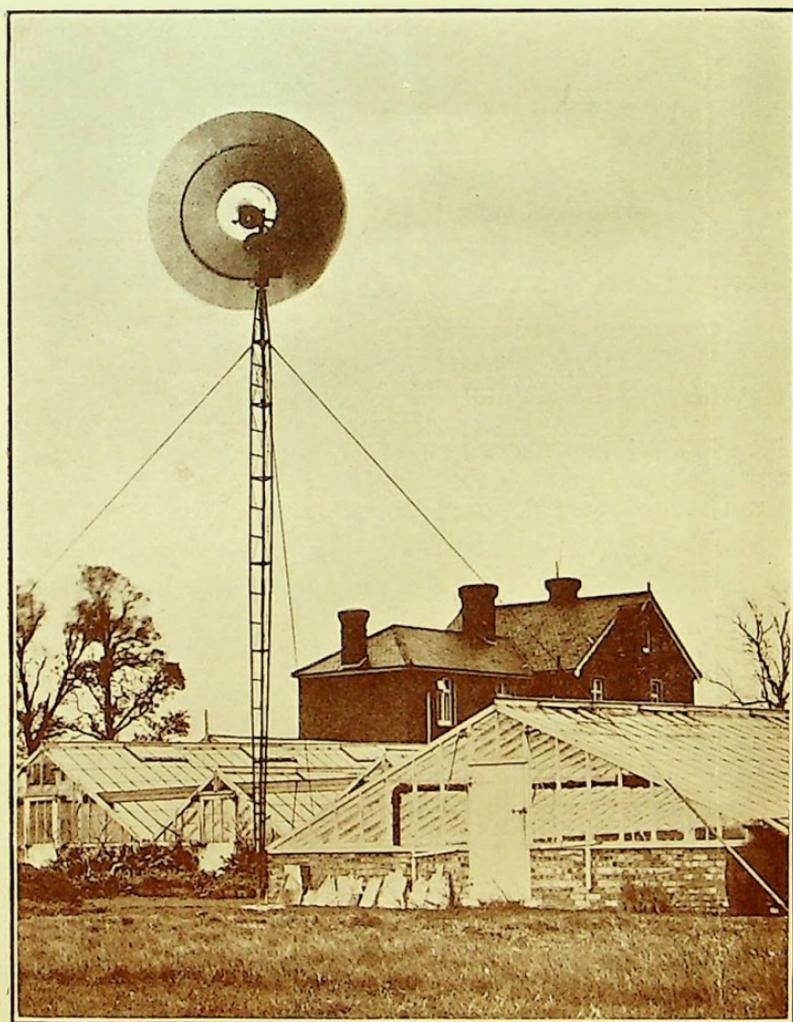
The Althea pamphlet was sent to me by Mr. W. A. Harding: it refers <sup>(individual)</sup> only to house lighting by wind-driven dynamo + it is possible that system is not applicable to large installations of even moderate size. It would be a great matter if it were possible to make use of wind for driving dynamos for lighting streets + houses in Stanley.

I will give you some reference to Colonel Sargison for his consideration. He has records of wind for nearly two years I think. These will give some indication of force which can be depended upon.

Yr.

11 November 1924.

# WIND-DRIVEN HOUSE LIGHTING SETS



Telephone - Victoria 3978.

The Wind-Driven Dynamo Co.,

11, TOTHILL STREET,  
WESTMINSTER—S.W. 1.

Abbey House,  
Victoria Street

( Room 539 )

## ADVANTAGES.

**WIND AS A MOTIVE POWER** The advantages of wind as a motive power for generating electric current for house lighting purposes are not yet sufficiently realised. There are in this country alone numerous exposed positions where a wind plant can be installed with no doubts as to its capacity to do all that is required. Our Plants are the outcome of several years' experiment, and where we are satisfied that the situation is suitable we can confidently recommend them.

**LOW FIRST COST** Our Plants are low in first cost, comparing favourably in this respect with an oil engine installation.

**NO RUNNING EXPENSES** Once installed there are **no running expenses** for fuel, etc. A few shillings for grease and an occasional coat of paint will be the only outlay for many years. Such an equipment will save in running expenses alone at least £15-£20 per annum over a corresponding size of petrol engine plant.

**NO ATTENTION** Our Plants **do not require attention** except that every two or three months a little oil or grease will be required.

**LARGE STORAGE BATTERY** We supply a storage battery which is charged by the wind-driven dynamo on the mill, and which is of very ample capacity, so that in the event of wind failing, light can always be obtained; our experience from the plants we have installed being that the battery has never failed to give the requisite supply.

**SITUATION** The mill and dynamo may be placed at a distance from the house, and the current transmitted through copper wires slung overhead.

**PLANTS IN OPERATION** We shall be pleased to show at any time a plant of the smaller size, lighting a residence and outhouses in the country near London.

## House Lighting by Wind Power

**F**OR generating electricity for house lighting and other domestic uses, the advantages of utilizing the wind as a motive power have not yet been sufficiently realized. Electricity necessitating **No Fuel** and requiring **Very Little Attention** should appeal to all. Formerly, in the case of windmill electric plants, the capital outlay necessary has been, in the majority of cases, disproportionate to the proved benefits.

Our plants are the outcome of several years' experiment, undertaken with the object of providing a reliable source of electricity at a first cost comparable with that of any type of generating plant.

At the same time, only the very best materials are employed throughout. By this means, and by our unique design, we are enabled to put on the market a Windmill Electric Plant second to none in efficiency, low installation and running costs, and above all, in reliability.

### EFFICIENCY.

The wind-wheel is of light but extremely strong design, and runs on very ample ball bearings. The specially constructed dynamo is mounted close to the wind-wheel and is driven by short roller chains, providing an almost direct drive which absorbs a minimum of power; hence, the utmost use is made of the lowest wind velocities.

### LOW INSTALLATION COSTS.

Our special Tower (or mast) design calls for no expensive foundation work, and permits of the complete assembly of the mill being carried out with ease on the ground—after which it is a matter of minutes to haul the mill into a vertical position, and to secure it by means of three steel cable guys.

### NO RUNNING EXPENSES.

Once installed, an outlay of a few shillings per annum for grease, and a coat of paint every 2 or 3 years will be all that is required to keep the mill in good order.

For painting, etc., the mill may be lowered in the same way as in erecting, and the overhaul carried out on ground level. A ladder on one side on the lattice mast permits of easy access to the mill-head for the very occasional greasing required.

#### NO ATTENTION.

The mill is quite simple and automatic in action and can be safely left to itself for months at a time. It is fitted with special gear to limit its speed in storms, thus preventing the battery being charged at too high a rate.

We have perfected an extremely sensitive automatic switch, which only connects the dynamo to the battery when the voltage of the former is in excess of that of the battery.

Thus, when there is not enough wind to generate, no current can leak back from battery to dynamo.

#### RELIABILITY.

All running parts are mounted in very substantial Ball Bearings enclosed in waterproof housings and with ample space for grease. These literally will run for years without any attention, although greasers are fitted to facilitate lubrication.

The Roller Chains we employ are the best that can be obtained, and to give long life a size is used many times in excess of the actual maximum load requirements.

The Dynamo is designed to comply with the special requirements of a windmill plant; very large brushes are employed and the commutator has ample wearing depth. By mounting the Dynamo at the mill-head, overheating is an impossibility, as the cooling draught is proportional to the load.

The Battery is of the Glass-jar house-lighting type, and is of first class manufacture. Battery sizes are employed which will ensure a full supply of current during the maximum period of calm usually met with.

#### SITUATION.

Care should be taken in selecting the site of the windmill to avoid proximity to wind obstructions, especially in the way of the prevailing wind. We are always pleased to advise on this or other matters.

The mill may be placed at a considerable distance from the battery house, bare copper wires slung overhead being quite suitable for the low voltages used.

#### PUMPING.

When these mills are used, water for household requirements, etc., may be pumped by means of a small electric pump with motor, operated from the battery, and placed where most convenient for the well. This duty must of course be taken into consideration when determining the size of the mill.



No. 1 MILL.

#### USE AS AN AUXILIARY.

Our mills may be used in conjunction with existing engine plants and batteries, the engine becoming merely a stand-by for use when an exceptional supply is needed.

In this connection it should be noted that a smaller mill can be used than would be the case where one would be working without an engine as a stand-by.

### OTHER ELECTRICAL APPLIANCES.

If specially required, electrical apparatus such as irons, radiators, vacuum cleaners, etc., can be run from our plants, but usually this entails a larger mill and battery than is the case where lighting only is desired.

It should be noted that quite a moderate size electric radiator consumes as much current as 20-30 electric lamps.

### PLANTS IN OPERATION.

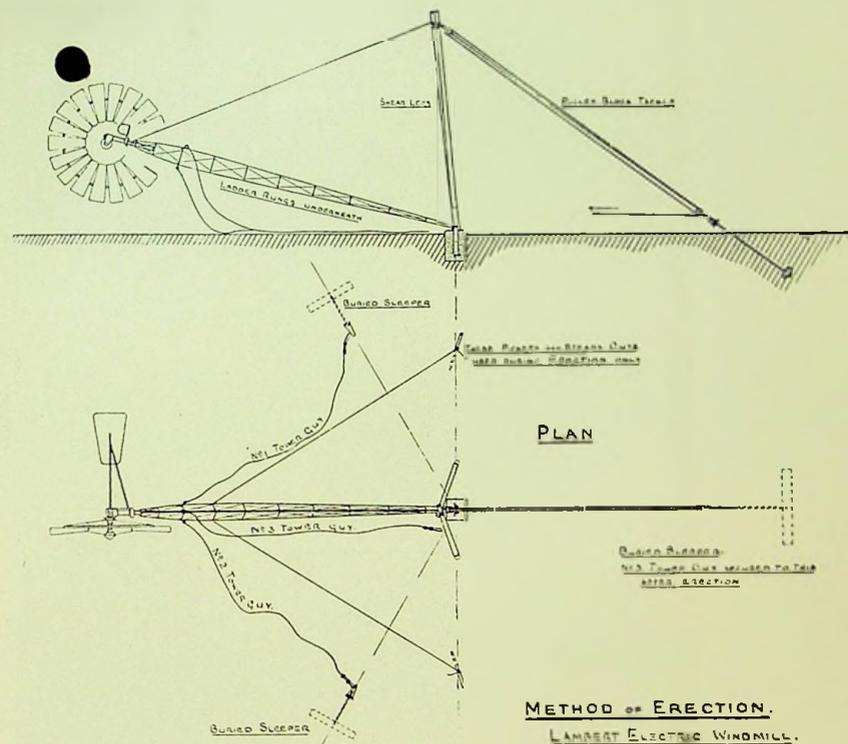
We have plants working successfully in various parts of the country, and can usually arrange for prospective customers to view one of these.

### MILL SIZES.

As a guide, we give sizes and prices of mills for particular installations of lights, but we prefer, on receipt of detailed particulars (such as number and power of lamps in use at a time, situation for windmill-- whether exposed, etc.), to go more fully into each individual case.

To obviate loss of time, we give a series of points *re* which we require information to enable us to quote in detail.

- (1) Address, to permit of an estimate of the prevailing wind conditions.
- (2) Site for mill, whether exposed or with wind obstructions such as buildings or trees.
- (3) If obstructed, nature and height of obstructions and distance from mill, and position with regard to the prevailing wind.
- (4) Total number of lights installed, or required.
- (5) Number of lights normally in use at a time, with total candle-power required.  
Normal duration of lights (*i.e.*, until 11 p.m.)
- (6) Whether required to run radiators, or other heating units. If so, size of same and duration of use per day.
- (7) If water is to be pumped, amount in gallons per day, depth of well, and height to which it is to be lifted.
- (8) Distance of mill from proposed battery house.



### ERECTION OF PLANT

The foundation consists of a small block of concrete in which are set the mast footstep angle irons. Three steel guy cables hold the plant in a vertical position and are anchored to three buried logs, or sleepers (in the case of the largest mills, concrete or channel irons are preferable). The three guy anchorages are set around the footstep according to the foundation plan supplied with each plant. One of these anchorages is utilized as an anchorage for the tackle used to raise the mill. The diagram shows the layout we recommend.

The great advantage of this method of mill construction lays in the fact that all assembly may be carried out on the mill head, and vanes bolted in place, before raising the mill.

## SPECIFICATION.

Our plants as sent out consist of the following:—

**MAST**, in 2 or 3 sections, complete with head pivot tube, hand-regulating winch, steel guy cables, clips and strainers for same, mast footstep irons, guy anchorage rods. (Sleepers for guy anchorages not provided.)

**MILL-HEAD**, with wind-wheel, dynamo, chain drive, tail-vane, governor springs, collector slip-rings and brush-gear for same, current-carrying conductors from dynamo to collector slip-rings and from brush-gear to two porcelain insulators on mast. (Bare copper overhead conductors from mast insulators to battery-house are not provided.)

**SWITCHBOARD**.—Polished slate panel on angle iron frame, carrying ammeter, voltmeter, voltmeter switch, two D.P. switches, four fuses, terminals, and automatic cut-in and cut-out switch.

On sets No. 1A. and 1, a discharge ammeter and two battery-regulating switches are also provided.

**BATTERY**.—Consists of the requisite number of glass-jar cells, sent out fully charged, and all acid, connecting strips, etc., provided. (Battery stands not provided.)

## PRICE LIST.

Plant.	No. 1A.	No. 1.	No. 2.	No. 3.
Diameter of wheel in feet ...	16	13½	11	9
Height of mast in feet ...	40	35	30	30
<b>Dynamo.</b>				
Output in watts ...	1,500	1,000	700	450
<b>Average daily output in watt hours.</b>				
Summer ...	2,000	1,400	900	600
Winter ...	3,000	2,000	1,400	900
<b>Installation of 20-watt Lamps.</b>				
Number installed ...	80	50	30	20
Number in use at a time (as an average)	20	15	8	5
<b>Battery.</b>				
Number of cells ...	54	27	16	12
Ampere hour capacity ...	120	140	120	100
<b>Price.</b>				
Windmill plant... ..	£ 196	£ 158	£ 115	£ 86
Battery ... ..	£ 137	£ 76	£ 41	£ 27
<b>TOTAL ... ..</b>	<b>£333</b>	<b>£234</b>	<b>£156</b>	<b>£113</b>

The above prices include free delivery to any railway station in Great Britain. All packing cases, crates, carboys, etc., charged for unless returned in good condition within one month.