(Continued from page 1.) "су-The basins are what we call clones." They are shown on the weather chart by a series of isobars surrounding a centre of low pressure. It is worth while distinguishing between the valley and the basin, the Vdepression and the cyclone, that is, because they have very different types of weather associated with them.

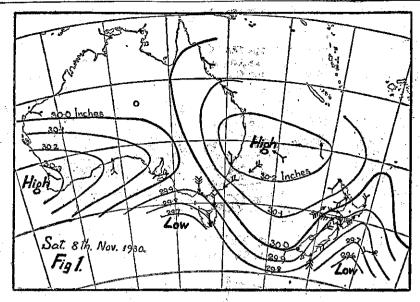
But our pressure hills, basins, and valleys differ from the correspondingland features in one important characteristic, that of movement. It is true that there is a scriptural reference to valleys being exalted, and hills being laid low"; but in spite of recent experiences in connection with the Murchison earthquake, the process is usually a slow one. I did once read a story of a vessel which, in order to avoid the hazards of the sea, took to the land, but had the misfortune to strike a landstorm, in which the mountains heaved and sank, and rocks came aboard in The authenticity of that quantities. story has not, however, yet been proved. But there is no doubt that our pressure systems both anticyclones and depressions, can and do move with considerable rapidity. The average speed, in fact, is something like 600 miles a day. At this time of year it is more than that, which accounts for the rapidity of the weather changes. Three of these V-depressions have passed us this week.

There is, however, fortunately for the forecaster, one important restriction on the movement of pressure systems, and that is that in these latitudes they are or even, in the northern portion of our region, from due north, but never from the east. Since the pressure systems carry their weather with them, a knowof the depression, is irregular and the shape and the accompanying weather is constantly changing.

## Two Important Principles.

REFORE going any further, I must explain two other important principles which aid the forecaster. These refer to the relationship between wind and pressure, or, what is the same thing, wind and the isobars. The first, which is often referred to as the "law of storms," is that, if you stand with your back to the wind, you will have low pressure on your right and higher on your left. That is in the Southern Hemisphere; the rule is reversed for the Northern Hemisphere. Using, again, the analogy between pressure and altitude, we may say that instead of flowing down a slope, the air flows across it, with the downward side to the right. As a matter of fact, the flow is not quite directly across the slope, but slightly downhill. In other words, the wind blows nearly parallel to the isobars, crossing them from high toward low pressure at a slight angle.

The other principle is that the steeper the slope, the more rapid will be the of light winds and fine weather in flow, or the steeper the pressure gra- an anti-cyclone or on a ridge connect-dient the stronger the wind. Where ed with one, Then, as this moves dient the stronger the wind. Where ed with one. Then, as this moves the pressure gradient is steep, the iso- away eastward, we get on to the slopes bars will be close together. Therefore, of the valley of the V-depression. The the closer the isobars the stronger the winds will begin to blow from the wind. These two principles account for north.



most of the characteristics of anticyclones and depressions.

## An Anticyclone.

AS a result of the first of these rules, the wind tends to blow round an anticyclone in a direction opposite to that of the movement of the hands of a clock, while round a depression the movement is clockwise. The mountains of New Zealand, of course, deflect the wind very considerably, and this accounts for local irregularities of both ind and weather.

Turning again to our pressure mounpractically always moving from west tain, the anti-cyclone, we find that it toward east. It may be from some has a broad and gently-sloping sumdirection rather north or south of west, mit, so that the winds are usually mit, so that the winds are usually light and variable and the weather. though sometimes cloudy, is fine about its centre. We do not like a very high-pressure mountain or, as we call ledge of the rate of movement from it, an intense anti-cyclone, however, in the west naturally allows us to anti- New Zealand, because it usually has cipate the weather changes they will a steep slope on some side leading to bring. The value of this principle to a deep depression of some kind at the the forecaster is, however, limited, be-bottom. Very often this depression cause the rate of movement, especially is of the basin form, or a cyclone, and we get some of our worst weather and our heaviest rainfalls from it. applies particularly to the eastern districts of New Zealand. At this time of year the anti-cyclone centres, with the accompanying fine weather, are too far north for us to get much benefit from them. We pass rapidly from one depression to another.

Passing on to the V-depression or pressure-valley, as has been explained, it is usually a valley in a general slope to the southward. The general slope gives the winds a westerly tendency, according to the law of storms. (It is, in fact, the origin of the winds of the "roaring forties.") The prevailwinds, therefore, are north-west, west and south-west. Owing to this fact and to the regular movement of the depressions from the westward, they are sometimes called "depressions of the westerly type." They are our of the westerly type." Temmonest type of storm.

The valley of our V-depression runs, usually, in a more or less north-west to south-east direction rather than due north and south. The course of events during the passage of one of these denressions is somewhat as follows: At some stage we will be in an area

Coming from the north, they

will tend to be warm and, since the previous weather will have been cool or cold, we forecast "mild or milder temperatures." The strength of the northerlies will depend on the steep-

Station.	Winda	-	P.	Tem.	W.
Patea	NW 5		29.81	58	P
Wanganui Foxton	W 5	,	29.82	61 57	EC
C Campbell			29.65	60	Q B
Westport .	SW 4		29.75	52	BCP
Dunedin Bluff	NE 1 N 1		29.67 $29.54$	49 49	OD
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Puyse-		-			!
gur Pt. Cape Marie			29.49	47	OP
V.D.	W 4		30.04	70	CZ -
Opotikí	SW 2		29.90		BC
Tanpo East Cape	NW 2		29.82	54 60	. Q
Browning Of ADC					
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THE above is a portion of the extended weather report which is broadcast by 2YA during the 7 o'clock session. In the first column is given the direction of the wind, followed by its force reckoned on the Beaufort Scale. This translated into velocity in miles per hour at 16 feet above ground is 0, calm, 0-1 m.p.h., 1, light air, 2-3, slight breeze, 4-7; 3, gentle breeze 8-11; 4, moderate breeze, 12-16; 5 fresh breeze, 17-21; 6, strong breeze, 22-27; 7, high wind, 28-38; 8, gale, 34-40; 9, strong gale, 41-48, 10, whole gale, 49-56; 1, storm, 57-65; 12, hurricane.

The next column is the barometric pressure in inches of mercury while the temperature is degrees farenheit, or the ordinary temperature as we know it. The fourth column deals with the weather, and for this the following legend is used:—

Weather.—B., blue sky; B.C., blue sky and detached clouds; C., cloudy; O., overcast; G., gloomy, dull; U., ugly threatening; R., continuous or steady rain; S., snow; D., drizzle; P., passing showers; H., hail; Q., squally; L., lightning; T., thunder; F., fog; M., mist; Z., haze.

A fifth column can be added, the matter for which is broadcast. This refers to sea conditions, such as calm, light swell, or rough, as the case may be. This, however, is quite evident, and needs no explanation. There is and needs no explanation. There is one point which sometimes confuses listeners, that is when the letter "C" (denoting cloudy weather) is followed by particular of the sea. Some listeners mistake the letter "C" for the word "sea." There is no connection, and it is only by chance that the word cover terestime. the words come together.

ness of the valley slope. less rain falls as we descend the slope, especially in western districts. the more nearly due north and south the valley runs and the deeper it is, the more general and heavy will be If the valley is wide open the rain. to the south, so that the V of the isobars is very blunt, the westerly component in the winds will be unusually marked.

Rain will, on these occasions, be confined mainly to those districts which meet the westerly winds directly, or "districts with a westerly aspect." The steeper the slope presented to the wind the heavier will be the rain. Rain of this kind, therefore, is heaviest on the western side of the ranges of the South Island. It is erratic at Wellington and in the Taranaki Bight, fairly heavy on the high country yound Mount Egmont and extending ear ward to Tongariro and Ruapehu and north-ward to Ragian, and, if it extends so far northward, also on the higher parts of the Auckland Peninsula. Frequently the rain does not extend north of Taranaki. In the eastern districts, especially in Hawke's Bay and Canterbury, warm and dry conditions are experienced in this weather of the pronounced westerly type.

## Squally Weather.

WHEN we reach the bottom of the Vdepression we come suddenly on the upward slope, the rising country, of the other side. The wind must now blow from some southerly direction, usually south-west. The change from north-west to south-west is generally very sudden and often accompanied by a squall. There is an immediate drop in temperature and almost invariably some rain. The steeper the slope of a valley side the rougher is the go-ing, and so in our depression the steeper the rise in pressure the stronger the winds. After the southerly winds have been blowing for some time the sky begins to break and gradually clear the wind dies away. Another anti-cyclone or ridge of high pressure ap-Sometimes, however, our depression is not a simple one, there are several dips in the same main valley. The first depression may be fol-lowed by one or more "secondaries," as they are called. These complicate the work of the forecaster very considerably.

The basin-shaped depression, or cyclone, is less regular in its movements than the westerly depression, and its centre may be found in any part of our region. As would be experied, it winds circulating completely round it. Consequently, on the eastern and s, thern sides we have winds from between\_north-east to east and southeast. In fact, any persistent strong east wind in New Zealand is nearly always due to a cyclone. The weather is usually very dull in the eastern half of the cyclone, and fogs are very com-Rain usually falls, and is frequently very heavy. Since the winds are mainly from the east, the heaviest rains are usually in eastern districts. The West Coast of the South Island is protected by the main ridge, and the best weather is found there. If the best weather is found there. centre is far north, Otago and Canter-bury have comparatively little rain. The winds and weather in the western half of the cyclone are generally similar to those in the western half of a Y-depression. The southerlies of the south-west quarter are, however, frequently south or south-east rather than

(Concluded on page 29.)