



## *What's Colour Got to Do With It?*

*by Jane Henning*

Many assumptions are made about an unraced horse's likely ability based on the colour of its coat. We have all heard such comments as, "I would only buy a bay Flying Spur," or, before Lion Hunter raced, "There's never been a good grey by Danehill"!

The perception that a sire produces more stakes winners of one colour than another can be true, but what seems to be overlooked is that various stallions produce more of one colour than others. This can give a distorted view of the ability of their offspring.

### **Can colour affect racing ability?**

We are lucky in the thoroughbred industry to have access to all manner of statistics and records. It is not too difficult to gather data to assess any theory.

In the case of Flying Spur for instance, a look at the colour of all his progeny to-date reveals that 75% of them are bay or brown and 23.5% are chestnut, the remaining 1.5% being grey. Compare these facts with his current list of 24 stakes winners in Australia and there is a direct correlation. 75% of his stakes winners are bay or brown, while the remainder are chestnut (17%) and grey (8%). With a much smaller number to work with, the stakes winners figures are not yet as accurate as the bigger sample of all foals, but as Flying Spur continues to add to this list, I'm confident that the ratio will even out to match his total foal colour ratio. And as the greys would have started out life as either bays or chestnuts, they always distort the figures a little.

### **Why is it that some stallions don't produce chestnut foals and yet there don't seem to be any stallions that can't produce bays and browns?**

There are two main genetic categories for colour, chestnut and bay (which encompasses brown and black). For the purposes of this article, the term 'bay' will cover brown and black. Grey is not a colour, it is a 'factor' which overrides the original colour. Grey horses are born either chestnut or bay and its variations.

Each horse carries two genes for colour. The bay gene is dominant to the chestnut gene, so if a particular sire has at least one bay gene, he will be bay. Having two genes for different colours is termed being 'heterozygous' for colour.

Being recessive, it takes two chestnut genes to produce a horse with a chestnut coat.

The reason why some stallions don't produce chestnut foals is that they haven't got a chestnut gene to match up with the chestnut gene in a mare necessary to produce the chestnut coat colouration. Having two genes for the same colour is termed being 'homozygous' for that trait.

A chestnut horse has two chestnut genes. When he is mated with a bay mare, he either has a 50% chance of producing a bay (if she has a recessive chestnut gene) or a 100% chance of producing a bay (if she has two bay genes).

So, unless a chestnut stallion is only mated with chestnut mares, he will always have a percentage of bay progeny.

### **Does this mean that homozygous bay stallions are also more dominant in producing winners?**

No, there is no evidence that the inheritance of colour is associated with racing ability. Although there are some champion homozygous bay stallions such as Danehill, Sadler's Wells and Zabeel, there are also plenty of highly successful stallions which are heterozygous bays, such as Nureyev, Storm Cat and Encosta de Lago.

### **How come even homozygous stallions such as Danehill have produced some greys?**

The greying factor is completely dominant, so if the mare contributes the greying factor in a mating, the foal will turn grey. Like the colour genes, a horse can be a heterozygous grey (ie have one greying factor affected gene and one normal colour gene) or homozygous grey (both genes affected by the greying factor). A heterozygous mare or stallion will have approximately 50% grey progeny, while a homozygous grey will have 100% grey progeny. Raffindale was a homozygous grey, having inherited the factor from his two grey parents. Kenmare was a heterozygous grey, his mother being a chestnut. He was able to produce foals of all colours, however 50% were grey.

As most greys are heterozygous, non-grey stallions will generally produce grey foals to about half the grey mares they serve.