

If Only They Could Talk

Our regular focus on equine health. This month MJR vet NEIL MECHIE describes a fascinating experiment being carried out in the yard on artificially extending daylight hours for some horses to mimic the effect of the summer season.

TOWARDS the end of last year Mark was contacted by horse transporter Sam Murphy who put forward an interesting proposal. His idea was about enhancing the level of light provided to horses during the darker months of win-

ter to manipulate and lengthen the horse's perception of the summer racing season.

The scientific principles underpinning the manipulation of daylight provision in animals is relatively simple and therefore relatively easy to manipulate.

The pineal gland in the brain is responsible for the production of melatonin from serotonin, a process that relies on two enzymes to carry out the conversion of the hormones.

Enzymes are catalysts that bring about biological reactions within living organisms. Melatonin is only created and secreted during hours of darkness as one of the essential enzymes in its production is active during the dark hours; for the rest of the time serotonin is secreted.

Light intensity is measured in units called lux. At light levels of less than 100 lux the switch from serotonin to melatonin secretion occurs, with maximum melatonin secretion at less than 50 lux. This is hormonally perceived darkness. Peak serotonin secretion occurs at above 300 lux.

As well as the intensity of light, full spectrum sunlight is very important in the hormonal recognition of light. The length of day versus night is the most important cue for allowing animals to determine which season it is and therefore has effects on the reproductive system, coat quality, growth and many other things.

Light manipulation is already widely used within the equine breeding industry to advance oestrus cycling in mares by increasing day length and mimicking an early onset of spring, allowing mares to be covered very

early in the year, before the stage at which most mares would be cycling naturally.

Extensive renovation of the horse boxes at Kingsley House took place over the winter and included in this was the implementation of full spectrum daylight-mimicking lights, one at each side of each of the boxes.

These lights are currently all set on an automatic timer, coming on at 6 am and turning off at 10 pm, mimicking the provision of summertime light and, in theory, making the horses feel an early onset of summer.

We are in the process of implementing a special 365-day timer that will allow us to change the length of light provided to the horses every day. The summer solstice is usually on June 21 and is known as the longest day because it has more hours of daylight than any other day of the year.

The aim of the experiment is to create a three-month period, covering the weeks before and after the summer solstice, in which every day will have the same amount of daylight as the longest day. After this period the light provided to the horses daily will shorten by an equivalent amount to that which sunlight hours would normally shorten on that day. This will happen until the winter solstice December 21. This will have the effect of giving the horses an hour more daylight in the morning and an hour more in the evening than normal throughout the winter. After the winter solstice the days will lengthen by equivalent times to natural sunlight until we reach the elongated summer solstice again.



Neil uses a digital lux meter to check the light in the boxes

By doing this the horses will hopefully experience an elongated summer and a short winter. We hope that this will bring the horses into their summer coats earlier in the season and help them maintain their coats later into the autumn.

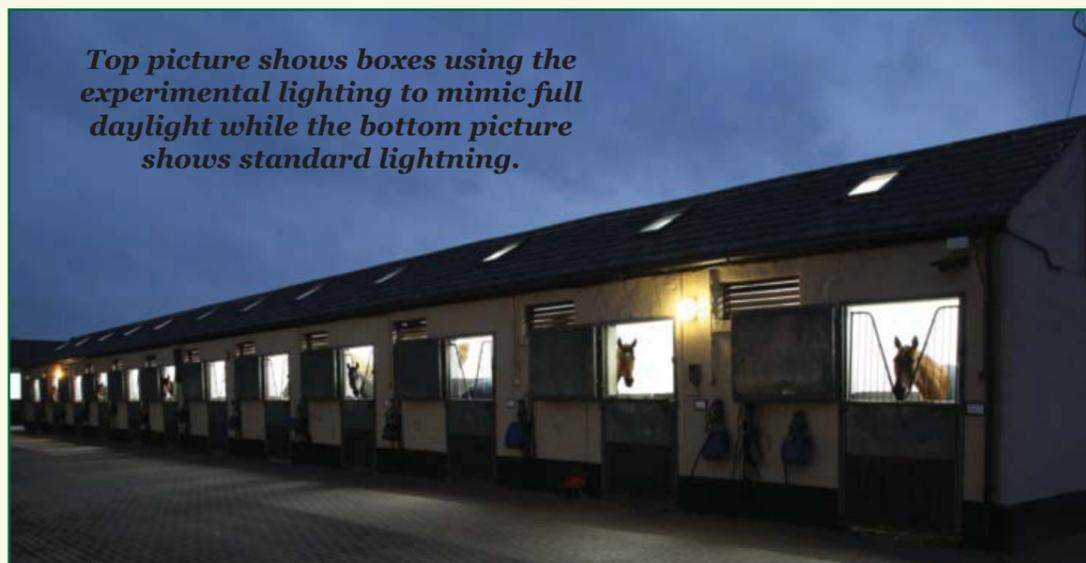
By placing two lights in each box we aim to provide the critical 300-plus lux of light to all aspects of the stable, mimicking full daylight within the horse's box. The light levels are easily measured using a hand-held lux meter and in the renovated boxes we can exceed the required light in all places.

In a non-renovated box with a normal bulb on a cloudy day in the winter, the light levels with the light on in the box were only between 28 and 50 lux,

which, as stated earlier, is hormonally perceived by the horses as darkness.

Increased levels of light are also linked to lower bacterial and fungal counts from within the environment. This may be an additional positive effect of the implementation of increased light levels, as the highest prevalence of fungal or bacterial skin and respiratory infections are within the winter. Therefore increasing light levels and decreasing bacterial and fungal levels may be of benefit to the horses' well-being.

There is very little research into the provision of light therapy into form improvement in racehorses, but as we implement this system we will be closely monitoring the results of the horses under the special lights. ■



Top picture shows boxes using the experimental lighting to mimic full daylight while the bottom picture shows standard lightning.



Neil Mechie

At Mark Johnston Racing, the peace of mind of our owners is a priority. This is why we have included the vet fees in our inclusive daily rate for horses in training.

Neil Mechie did his veterinary degree at the University of London. He then worked for 14 months as an intern at the Minster Equine Hospital, York, where his duties included surgical and colic work. After a spell at the specialist equine practice of vet Simon Stirk, near Ripon, Neil worked for six months at Clevedale Veterinary Practice at Guisborough. Neil's keen interest in racing is heightened by the fact that he has a point-to-pointer, and when not kept busy with work by Mark, Neil spends time looking after his border collie.

The MJR veterinary team



John Martin

John Martin is from the town of Stradbally in County Laois in Ireland's Midlands. He was raised on a farm and from a young age had ambitions to be a vet.

He trained at University College in Dublin and it was there that he first took an interest in horse racing, which nurtured an ambition to eventually specialise in working with horses as a vet.

After graduating he took up a post at a veterinary hospital in Navan, County Meath, before moving to England to join a practice in Louth, Lincolnshire.

He joined MJR at the start of 2010, staying for more than two years before returning to Ireland for a brief spell and then resuming his position at the yard in April 2013.

